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LECTURES
Collegii **ON** *Regii*
DIET AND REGIMEN:

Medicor **BEING** *Edinburger*
A SYSTEMATIC INQUIRY

H. h
INTO THE
MOST RATIONAL MEANS OF
PRESERVING HEALTH AND PROLONGING LIFE.

TOGETHER WITH
Physiological and Chemical EXPLANATIONS, calculated
chiefly for the Use of FAMILIES; in order to banish
the prevailing Abuses and Prejudices in MEDICINE.

- By A. F. M. WILLICH, M.D.

Physician to the Saxon Embassy at the Court of Great Britain;
Author of The ELEMENTS of CRITICAL PHILOSOPHY, &c.

Qui stomachum regem totius corporis esse
Contendunt, vera niti ratione videntur:
Hujus enim validus tenor firmat omnia membra;
At contrâ ejusdem franguntur cuncta dolore.

SERENUS SAMMONICUS,
De Medicina Præcepta saluberrima.

L O N D O N :
PRINTED FOR T. N. LONGMAN, PATERNOSTER-ROW.

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T O
THE RIGHT HONOURABLE
THE MARQUIS OF LANSDOWN.

MY LORD,

INDEPENDENT of the illustrious rank which your Lordship has long and justly maintained in the Republic of Letters, as an accurate judge and a distinguished promoter of literature, I feel an additional inducement to offer this Work to your Lordship's attention and patronage.

The unaffected condescension with which your Lordship honoured me last winter at Bath, and the flattering approbation you were pleased to bestow on the first Course of these Lectures, are a sufficient testimony of your Lordship's benevolence and liberality.

From the great diversity of subjects treated in this Work, I have reason to hope your Lordship will make every allowance due to an attempt which, I apprehend, has not hitherto been made in the English language.

Trusting to your Lordship's candid and impartial decision on the merits of the present Publication, which obviously relates to the chief conditions of our existence as physical and moral agents, I have the honour to subscribe myself, with sentiments of profound respect,

MY LORD,

Your Lordship's

Most humble and

Most obedient Servant,

A. F. M. WILLICH.

DOWNING-STREET,

November 1798.

ADVERTISEMENT.

THESE Lectures, with the exception of the Eighth and Ninth Chapters, were delivered last winter at Bath, and in the spring at Bristol, to numerous and respectable audiences. The Author had no intention, at that time, to publish them: but as he found, in the English language, no Work comprehending such a systematic view of the various and important objects which came more immediately under his consideration; and conceiving that the dissemination of the rules selected by him might be generally useful, he was induced to alter his resolution, and submit them to the candour of the Public.

To many English and German writers he must acknowledge his obligations, in the composition of his Work. Among the former, he has occasionally availed himself of the excellent Writings of INGENHOUSZ and PRIESTLEY, on the subject of ‘*Air and Weather* ;’ of FOTHERGILL and VAUGHAN, ‘*on Drefs* ;’ and of ARMSTRONG, CULLEN, and FALCONER, on ‘*Food and Drink*.’ To Dr. FOTHERGILL also, on the subject of ‘*Sleeping and Waking*,’ he is much indebted, as well as to Mr. ADAMS, for his useful Treatise on the ‘*Treatment and Preservation of the Eyes*.’

Beside

Beside the valuable observations drawn from all these sources, he has been greatly assisted by the opinions of several German writers, viz. HAHNEMANN, HUFELAND, MARCARD, SOEMMERING, ZIMMERMANN, and others ; having derived considerable advantage from the general result of their respective inquiries on the subject of Diet and Regimen.

Although it can scarcely be expected that a Work of this nature should be perfect, or free from inaccuracy, the Author has spared no pains to render it deserving of the public favour, that it may serve as a domestic guide to families and individuals.

Should the rules and cautions, interspersed throughout, tend in the smallest degree to improve the knowledge of the inquisitive, dissuade the unwary from injurious habits, or rescue the sensualist from the brink of destruction, the well-meant exertions of the Author will be amply compensated.

ERRATA :

- Page 47 line 17. *for* natural *read* unnatural
 162 — 21. *after* earth *add* mixed
 429 — 19. *after* ideas *add* which

ANALYTICAL

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INTRODUCTION.

WE live apparently in an age, when every branch of human knowledge is reduced to a popular system; when the most important sciences lay aside the garb of pedantry and mysticism; when, in fine, the access to information is open to every rank, and to both sexes. An improvement, which is so conspicuous, must ultimately be attended with the most desirable and extensive effects.

Among other beneficial pursuits, to render the comforts of life more effectual and permanent, we have occasion to observe, that Natural Philosophy and Chemistry contribute the principal share in spreading useful knowledge among all ranks of society.

Since Medicine, considered as a science, which rests upon practical rules of experience, is in a great measure founded upon Natural Philosophy and Chemistry; it will be allowed, that with the daily progress of the latter, Medicine also must necessarily partake of these improvements, and continually receive accessions conducive to its further perfection.

With the constant increase of refinement and luxury, a certain weakness and indisposition, whether real or imaginary, has infested society in the character of a gentle epidemic. It cannot properly be called a disease, but rather an approximation to an infirm state, which almost involuntarily compels man to reflect upon the relative situation of his physical nature, to acquire correct ideas on health, disease, and the means of prevention or relief, and thus imperceptibly to become his own guide.

Every individual of any penetration now claims the privilege of being his own physician:—it is not unfashionable to form a *certain* system concerning the state of our own health, and to consider this as the criterion, by which we may judge of ourselves and others, of patients and their physicians.

Formerly, people were not accustomed to think of the physical state of their body, until it began to be afflicted with pain or debility. In this case, they entrusted it to the practitioner in Physic, as we now deliver a time-piece to a watchmaker, who repairs it according to the best of his knowledge, without apprehending, that its owner will be at the trouble of thinking or reasoning upon the method, which he judged to be the most proper.

In our times, we frequently undertake the charge of prescribing medicines for ourselves: and the natural consequence is, that we seldom are able to tell, whether we are healthy or diseased; that we trust as much, if not more, to ourselves than to the
physician,

physician, who is only sent for occasionally; and that we cannot conceive him to be perfectly free from the systems of the schools, from self-interest, or some other professional motives. Thus, by an acquaintance with medical subjects, which of itself is laudable, not only the business of the physician is frequently thwarted, but likewise the recovery of the patient is unhappily retarded, or at least rendered more difficult.

No disease is now-a-days cured without demonstration; and he who can neither detect nor comply with the peculiar system of health adopted by his patient, may indeed act from motives dictated by reason and humanity; but his success as a *practical physician*, in the common acceptation of that phrase, must ever remain problematical. Yet this general propensity to investigate medical subjects, if it were properly directed and gratified, might be attended with very happy effects. For the medical art ought not to be subject to an imperious and fascinating demon, whose works are conducted chiefly in the dark recesses of mystery, whom we know only from his baneful effects, as he spares no objects of prey, and holds his votaries in a perpetual state of dependance!

“The veil of mystery,” says a modern popular writer, “which still hangs over Medicine, renders it not only a conjectural, but even a suspicious art. This has been long ago removed from the other sciences, which induces many to believe, that Me-

dicine is a mere trick, and that it will not bear a fair and candid examination. Medicine, however, needs only to be *better* known, in order to secure the general esteem of mankind. Its precepts are such as every wise man would choose to observe, and it forbids nothing but what is incompatible with true happiness."

If we reflect upon the constant sameness which prevails through the works of nature, both in the production and dissolution of matter; we find that she invariably moves in a circle; that in the perpetual construction, as well as in the subsequent demolition of bodies, she is always equally new and equally perfect; that the smallest particle, though invisible to our eyes, is usefully employed by her restless activity; that death itself, or the destruction of forms and figures, is no more than a careful decomposition and a designed regeneration of individual parts, in order to produce new substances, in a manner no less skilful than surprising. We further observe, that in the immense variety of things, in the inconceivable waste of elementary particles, there nevertheless prevails the strictest œconomy; that nothing is produced in vain, nothing is consumed without a cause. We clearly find all nature united by indissoluble ties; that every thing exists for the sake of another, and that

no

no one thing can dispense with its neighbour. Hence we justly conclude, that man himself is not an insulated being, but that he is a necessary link in the great chain, which connects the universe.

Nature is our safest guide, and she will be so with the greater certainty, as we become better acquainted with her properties, especially with respect to those particulars which most nearly concern our physical existence. Thus, a source of many and extensive advantages will be explored; thus we may approach to our original destination; namely, that of living long and healthy.

As long, on the contrary, as we move in a limited sphere of knowledge; as long as we are unconcerned with respect to the causes, which affect health or disease, we are in danger, either of being anxiously parsimonious, or prodigally profuse with the stock of those powers, by which life is supported. Both extremes are contrary to the purpose of nature. She must teach us the rule of just œconomy;—we, being a small part of her great system, must follow her example, and expend neither too much, nor too little of her treasures.

Although it be true, that our knowledge of nature still remains very imperfect; yet this circumstance ought not to deter us from investigating the means, which may lead to the acquisition of it.

We are assisted here by the experience of so many industrious inquirers, of so many sound

philosophers, that we may flatter ourselves with the hopes of discovering some of her hidden secrets, and of penetrating still further into her wonderful recesses. This, however, cannot be accomplished, without much patience and perseverance in the student.

All men, it is true, have not sufficient time and opportunities to acquire an accurate and extensive knowledge of nature; but they are inexcusable, if they remain entire strangers to her ordinary operations, and particularly if they neglect to cultivate a proper acquaintance with the constitution of their own frame. If, indeed, we were fixed to the earth like the trees by their roots, or if from mere animal instinct we were stimulated to inquire into the causes of our physical life; we then should vegetate, or live like plants or animals. But, in the character of creatures, which ought to choose and to reject agreeably to the dictates of reason, a more assiduous and minute study of nature, as well as of our own frame, is indispensable; because the human body cannot subsist, unless we second her intentions and co-operate with her beneficent efforts.

Yet it is not unfrequently objected, that medicine itself is an uncertain, fluctuating, and precarious art. One medical school, for instance, considers the mass of the fluids as the primary cause of all diseases; another ascribes them to the irregular action of the solids, and particularly the
nerves;

nerves; again some consider that as the cause of the distemper, which many are inclined to represent as the effect of it. Thus, different schools propagate different tenets relative to the origin of diseases; though ultimately, with respect to matters of fact, they must all necessarily agree. Nor is this diversity of opinions in the least degree detrimental to the practical department of medicine; provided that we do not regulate the mode of treatment altogether by hypothetical notions. Of what consequence, I would ask, is it to the patient, whether his physician imagines the nerves to be fine tubes filled with a subtle fluid, or not?—whether he believes that catarrhs arise from noxious particles floating in the air,—or from catching cold?—or whether he is prejudiced in favour of this or that particular theory of fevers?—It is a sufficient security to the patient, if his physician be thoroughly acquainted with the symptoms of the disease, and be able to distinguish them from those of any other malady. In this respect, the medical art is truly excellent, and without a rival; for the nature of diseases remains invariably the same. The accurate observations of Hippocrates made two thousand years ago, relative to the progress and symptoms of diseases, recur to the medical practitioner of the present day, in a manner sufficiently regular and uniform. And, in fact, how should it be otherwise; as nature always pursues the same path, whether in a healthy or diseased state of the body?

Here again it will be asked, whence does it happen that two physicians seldom agree in opinion, with regard to the case of the same patient? This question may be briefly answered, by claiming the same right for the medical profession, which is assumed by theologians in contested doctrines of divinity; by lawyers in arguing any point in their code, which is not perfectly plain; and by philosophers who maintain different opinions on the same subject in Metaphysics, for instance that of *space* and *time*. But there are more forcible reasons which enable us, in some measure, to account for this diversity of opinions in medicine. One of the physicians, perhaps, is in the habit of visiting fifty patients in a forenoon, so that he has not sufficient time to investigate minutely the nature and origin of the disease; while another of less extensive practice is enabled to do more justice to his patients, by attending to their complaints with proper leisure and accuracy. One of them shall distinguish some of the leading symptoms, and without hesitation pronounce, that he has discovered the true seat of the malady; but as many diseases of a different nature are attended with similar and common symptoms, no small danger is to be apprehended, of confounding the one with the other. Another shall enter the patient's room with a preconceived opinion on the subject of some prevailing epidemic, or his head is probably full of the case which occupied all his attention in his last visit; with these impediments,

ments, how difficult to institute a cool and un-biassed inquiry? If, again, both should happen to be called in at different stages of the disorder, each of them would prescribe a different method of cure, and the judgment of him who was last consulted, would in all probability be the most correct. Or lastly, one may be sent for, who having commenced his studies about the middle of this century, has not (from want of time or inclination) sufficiently attended to the more recent discoveries of this inquisitive age; how can it be expected then, that he should agree in opinion with those, whose knowledge has been improved by the numberless new facts and observations lately made in physics, and particularly in chemistry?

Man is subject to the same destructive agents from without, by which the lower animals are affected. But there is no doubt, that he is more easily and frequently exposed to diseases, than any of the inferior creatures. First, it is worthy of remark, that the latter are unquestionably provided with a more active instinct, by which nature teaches them, from their very birth, to avoid every thing that may prove hurtful, and to choose whatever may have a salutary influence on their mode of living. Few traces of this beneficial instinct can be discovered in the human race. Our own experience,

perience, or the instructions of others, which are likewise founded upon experience, must gradually teach us the wholesome or pernicious qualities of the objects of the material world. Reason, indeed, that peculiar faculty of man, indemnifies him, in great measure, for the want of this instinct; it directs his choice in pursuing what is useful, and in avoiding whatever is injurious. Yet, at the same time, the want of instinct in man, is to him, the source of many sufferings in the earlier years of his life. He is born without covering, to withstand the effects of climate; without arms to defend himself in his helpless state; and without instinct, if we except that of sucking. He remains much longer incapable of providing for his self-preservation, and stands in need of the assistance of his parents for a much greater number of years, than any other animal with which we are acquainted. Although human parents, in general, acquit themselves of this charge with much greater sollicitude and tenderness than the lower animals, yet our imperfect instinct is productive of much mischief to children, from ignorance and ill-directed tenderness in parents and nurses. Children are frequently furnished with articles of food and dress which, at a more advanced age, ripen the seeds of disease and dissolution. Thus, many infants are indebted for their obstructions in the mesentery, and the consumptive habit attending them, to their uninformed and over-anxious parents or friends, who are liable to com-
mit

mit daily errors with regard to the quantity and quality of aliment, which in many instances they so liberally administer to the objects of their care; even though it be of an indigestible nature.

In the *second* place, it is a fact universally admitted, that mankind, upon the whole, especially in large and populous towns, have much degenerated in bodily strength, energy of mind, and particularly in the capacity of resisting the noxious agency of powers, which affect us from without.

The progressive cultivation of the mind, together with the daily refinements of habits and manners, are ever accompanied with a proportionate increase of luxury. As this change from a hardier to a more relaxed state of life, has produced no difference in the *causes* generating disease, to which we are still, and in a greater degree, more subject than formerly, we must necessarily suffer by the concomitant *effects*. For, since luxury has assisted us in preventing the temporary effects of external agents, such as cold, heat, rain, &c. though we may occasionally guard ourselves against their severity, we shall, upon the next return of them, be attacked with much greater violence, than if we had been more habituated to their influence. And this state of things has imperceptibly introduced the use of many articles, both of dress and aliment, which in their consequences often prove detrimental to health. Hence we find, that in the same degree as the refinements of luxury increase in a nation, the number and variety

riety of diseases also increase. On the contrary, the more uncivilized a people continue, and the more their habits and customs approach to a state of nature, the less frequently are they affected by the causes of diseases. To characterize the modern efforts made to enfeeble the human frame, Dr. *Beddoes* makes the following pertinent remark :

“ In aid of delicacy of constitution, art has engaged in many a contest with nature. The carpetted floors, stuccoed walls, and double doors of modern apartments, are intended as its screen. But these, reinforced with the double windows of the north, would be an unavailing protection. Nature, brandishing her scourge, pursues with quicker steps than those who forsake her ordinances can retire. The susceptibility of impression increases faster, than ingenuity can bar our external agents; and in the best secured fortresses of effeminacy, it is the fate of the occupant, to shiver more at the inclemencies of the seasons than the mountaineer, who is exposed to all the blasts of winter.”

In the *third* place, we observe among the human race a much greater number of prevailing passions, and man is more violently, and as to the time of their duration, more obstinately governed by them, than any other living creature. These emotions, a moderate degree of joy excepted, variously affect the human body. But more noxious and oppressive than any other of the passions, are *terror* and *grief*: the former of which is sometimes so violent as to threaten

threaten immediate destruction. Controlled by their powerful influence, and hurried away by the impulse of the moment, the mind is rendered incapable of judging, and of selecting the means of appeasing those passions. Hence the remedies, to which we have recourse during the prevalence of passion, and which then appear to us the most proper, frequently lay the foundation of innumerable disorders, both of body and mind.

A *fourth* source of diseases among mankind, are various specific contagions. Perhaps the greater number of them originate in the atmosphere which surrounds us. This is highly probable, at least with respect to marshy exhalations, and such regions as are rendered unwholesome by different manufacturing processes. Another class of these contagious miasmata are those, which cannot be traced to any certain origin. Indeed, we daily observe their migrations; we perceive them moving from one individual to another, without fixing any stationary residence: yet they have hitherto frustrated every attempt made towards their extirpation. Of this unsettled nature are, the small-pox, the measles, the hooping-cough, the influenza, and many other epidemics. The first of them, namely the small-pox, has of late years been very successfully treated; and we learn from various quarters, that some of the most ingenious practitioners in Italy and Germany are, at this moment, employed in a serious attempt, wholly to extirpate this
conta-

contagion from the Continent of Europe; an object which has formerly been accomplished in the cases of the plague and leprosy.

Since it is established by numberless facts, that the temperaments, as well as the diseases, of whole nations, are in great measure influenced by their usual articles of food; it will no longer be doubted, that the most important consequences result from our aliment, whether of food or drink.

As the *doctrine of temperaments* is in itself highly curious and interesting, I think this a proper place for introducing a number of practical remarks, tending to illustrate this subject, and presenting a concise view of it, chiefly derived from the learned annotations of the celebrated Professor SÖMMERING, of Mayence.

“The doctrine of temperaments,” says he, “in the general acceptation of that term, must be allowed to have greatly misled the ancient physicians, and particularly those who lived before the time of *Galen*. We are not, however, to infer from this, that the doctrine itself is without foundation. They erred not, by admitting the existence of temperaments; for that seems now to be fully established; but by too great a fondness for *generalization*; by limiting the number of them to *four*, and fixing their attention in this division simply on the nature
and

and composition of the blood, instead of regarding the whole animal œconomy. Thus, for instance, they knew many parts of the human body scarcely by their names, and were little, if at all, acquainted with the great influence of the nerves; while our modern physicians pay an almost extravagant homage to these fashionable co-operators in diseases, and frequently forget over their favourites the more important, at least more obvious, parts of the fluids.

There is a certain line observable in all the more perfect animals, by which nature is regulated in performing the functions of body and mind; in preserving or impairing the health, and in exerting all those energies of life, on which the happiness of the creature depends. This line is various in different individuals, and the variety cannot be completely explained on the principle of the ancients, by a difference in the qualities of the blood alone; though a human body of moderate size contains not less than thirty pounds weight of that fluid. Other terms must therefore be substituted for their sanguine, choleric, phlegmatic, and melancholy temperaments; and before we attempt this, it will be necessary to take a more extensive view of the œconomy of man.

The causes of the difference of temperaments are various: *First*; a difference in the nervous system, with respect to the number of the nervous fibrils, their strength, and sensibility. A large brain, coarse

and strong nerves, and great general sensibility, have always been found to be the marks of a *choleric* or *choleric-sanguine* disposition. Hence proceeds the quickness of perception and capacity of knowledge in persons of this class, accompanied with great acuteness and rectitude of judgment, from the multitude of their ideas of comparison. These qualities are, however, in some measure counterbalanced by a violent propensity to anger and impatience under slight sufferings of body or mind. Medicines ought therefore to be cautiously administered to them, and in small quantities only. A diminutive brain and very delicate nerves have generally been observed to be connected with dull senses, and a phlegmatic languor, sometimes with a taint of melancholy. To affect the organs of such persons, the impression of external objects must be strong and permanent. Their judgments are often childish from the want of ideas, and hence they are seldom able to make great progress in science. They are, however, more able to endure labour, and the injuries of climate; consequently their medicines should be strong and administered in large quantities.

Second: Difference of irritability is another cause of difference of temperament. When the fibres are excited by the slightest stimulus to quick and permanent contraction, we may justly infer the existence of a choleric disposition; while a phlegmatic

one

one displays itself by opposite symptoms; the muscles being slowly contracted, and excited with difficulty by the most powerful stimulus.

Third: The fibres and membranes of a phlegmatic person are remarkably soft to the touch; those of a melancholic person hard and dry, with greater tone and facility of contraction.

Fourth: There appears to be sufficient reason for the opinion, that an *electric* principle is dispersed through the atmosphere, which is communicated to the body in different degrees by respiration; which supplies the fibres with their natural tone; gives a more lively motion to the vessels; and increases the serenity of the soul. This principle does not exist in the atmosphere in equal quantities in all countries, nor even in the same country at different seasons or hours of the day. Thus, during the influence of the *Sirocco* in *Sicily*, all the fibres are oppressed by languor, and when the air becomes more serene and elastic, the natural energy of body and mind return. All men do not inspire this electric matter in equal quantities, and thus a remarkable difference of temperament is produced.

Fifth: To these causes must be added the different nature and quantity of the blood. Thus, when the blood is highly stimulant, the heart is excited to more violent action; an increased secretion of bile promotes the vermicular motion, and a superfluity of mucus disposes to catarrh, &c.—There

are then causes sufficiently powerful to produce, at a very early period of life, an unalterable predisposition to a certain temperament. That a complete change is ever effected, from a choleric habit, for instance, to a phlegmatic, cannot be consistently admitted, at least while the laws of nature remain unalterable. I will, however, admit that the temperaments, though not completely changed, may be modified;—that the vehemence of some, and the languor of others, may to a certain degree be lessened. This must be done by remedies suited to the class of the causes productive of a particular temperament. Of these the principal are, *first*, a different regimen. Thus, animal food imparts the highest degree of strength to the organs, enlivens the senses, and often occasions a degree of ferocity; as is evident in cannibals, in carnivorous animals in general, in butchers and their dogs, in hunters, particularly when aided by the frequent use of spices, wines, and medicines. Vegetable diet, on the contrary, diminishes the irritability and sensibility of the system; in a word, renders it phlegmatic. Some authors indeed have considered the potatoes as being the means of contributing to that end; though I am not inclined to subscribe to this doctrine; since I have had occasion to observe the lively temperament of the common people in Ireland.—Yet attention to this is highly necessary in those, who have the charge of children; as by the use of animal food, additional energy may be given to the fibres,
and

and when the irritability of them is too great, it may be diminished by an opposite regimen.

2d. Education is another cause of altering the temperament of man. Its power is almost unbounded, especially in the more early periods of youth; and hence it often happens, that whole nations seem to possess one common temperament.

3d. Climate, in its most extensive sense, comprehending atmosphere and soil, is a third cause of difference. The agility and acuteness of a choleric habit are seldom to be found in a region of perpetual fog; as for instance, in Holland: they are the natural produce of a warm climate, and require a gentle elevation of surface, with a moist soil, and a serene and equal atmosphere.

4th. I have often observed an astonishing degree of activity communicated to the whole system by an ardent desire of learning; so that the temperament seemed to receive new life from every accession of knowledge.

5th. The want of the necessities of life, or possession of the means of luxury, variously modify the disposition;—and the liveliness of the temperament is also observed to rise or fall, according to the degree of political freedom.

6th. Age, company, and professional duties greatly affect the temperament. Hence we seldom find any one who, at 56 years of age, retains the activity of that choleric or sanguine habit which he possessed at 36.

Those who follow nature, and not a plausible hypothesis, will be sensible how difficult it is to classify and fix the characteristic marks of the different temperaments; and it is rather a matter of doubt, whether the following rude sketch will be more successful than those of others.

All the modifications of temperaments appear to be varieties of the *sanguine* and *phlegmatic*.

1. The sanguine is variable. It is marked by a lively complexion; the vessels are full of blood; and persons of this habit are seldom able to bear great warmth; they are predisposed to inflammations, and possess a high degree of irritability and sensibility. All is voluptuous in this temperament. They are fickle in every thing they undertake; are affable, and soon become acquainted, but as soon forget their friends, and suspect evil designs in every body. Whatever requires industry they abhor, and hence make little progress in science, till they advance in age:

2. The sanguineo-choleric enjoys all the health and serenity of the sanguine, with all the perseverance of the choleric.

3. In the choleric, the body is soft and flexible, without being dry and meagre as in the melancholic; the skin has a taint of yellow; the hair is red; the eyes dark and moderately large, with a penetrating expression, and frequently a degree of wildness; the pulse full and quick; the muscular contractions in walking, speaking, &c. are rapid; the bile

bile is copious and acrid, and hence the vermicular motion is active, and the body not liable to costiveness. Persons of this class are particularly fond of animal food. They possess great magnanimity, are fitted for laborious undertakings, and seem born for command.

4. He whose temperament is hypochondriacal, is a burthen to himself and others. Persons of this class are subject to diseases of the liver, and hence have a fallow complexion. They are never content with their situation, and are a prey to envy and suspicion.

5. The melancholic temperament is marked by a gloomy countenance, little, hollow, blinking eyes, black hair, a rigid or tough skin, dry and meagre fibres. The pulse is weak and languid, the bile black, the vermicular motion slow. The perceptions of persons of this disposition are quick; they are fond of contemplation, and are slow in the execution of labour, which they patiently undertake. They bear with resolution the troubles of life; and, though provoked with difficulty, are nevertheless vindictive.

6. The *Boetic* or rustic temperament has many of the qualities of the sanguine, in common with many of those of the phlegmatic. The body is brawny, the muscles have but little irritability, and the nerves are dull, the manners rude, and the powers of apprehension weak.

7. The gentle temperament is composed of the sanguine, choleric, and phlegmatic. Universal be-

nevolence is the distinguishing character of this class. Their manners are soft and unruffled. They hate talkativeness; and if they apply to science, their progress is great, as they are persevering and contemplative. Lastly,

8. The phlegmatic class is marked by a soft, white skin, prominent eyes, a weak pulse, and languid gait. They speak slowly, are little hurt by the injuries of the weather, submit to oppression, and seem born for subjection. From their little irritability, they are not easily provoked, and soon return to their natural state of indifference and apathy.

Although there is but one state of perfect health, yet the deviations from it, and the genera and species of diseases, are almost infinite. It will hence, without difficulty, be understood, that in the classes of medical remedies there must be likewise a great variety, and even some of them of opposite tendencies. So are both the warm and the cold bath, considered as medical remedies; though they are opposite to each other in their sensible effects. Each of them manifests its medical virtue, yet in such a state of the body only as will admit of using it with advantage.

It is evident from these premises, that an universal remedy, or one that possesses healing powers for the cure of *all* diseases, is in fact a nonentity, the

the existence of which is physically impossible ; as the bare idea of it involves a direct contradiction. How, for instance, is it conceivable, that the same remedy should be capable of restoring the tone of the fibres, when they are relaxed, and likewise have the power of relaxing them when they are too rigid ; that it should coagulate the fluids when in a state of resolution, and again attenuate them when they are too viscid ; that it should moderate the nerves in a state of preternatural sensibility, and again restore to them the proper degree of irritability, when they are in a contrary state ?

Indeed, the belief in an universal remedy appears to lose ground every day, even among the vulgar, and has been long exploded in those classes of society, which are not influenced by prejudice, and not tinctured with fanaticism. It is, however, sincerely to be regretted, that we are still inundated with a flood of advertisements in almost every paper ; that the lower and less enlightened classes of the community are still imposed upon by a set of privileged impostors, who frequently puzzle the intelligent reader to decide, whether the boldness or the industry with which they endeavour to establish the reputation of their respective poisons, be the most prominent feature in their character.—It was justly observed by the sagacious and comprehensive BACON, “ that a reflecting physician is not directed by the opinion which the multitude entertain of a

favourite remedy ; but that he must be guided by a found judgment, and consequently he is led to make very important distinctions between those things, which only by their name pass for medical remedies, and others which in reality possess healing powers."

I am induced to avail myself of this quotation, as it indirectly censures the conduct of *certain* medical practitioners, who do not scruple to recommend what are vulgarly called Patent and other Quack medicines, *the composition of which is carefully concealed from the public*. Having acquired their ill-merited reputation by mere chance, and being supported by the most refined artifices to delude the unwary, we are unable to come at the evidence of perhaps nine-tenths of those who have experienced their fatal effects, and who are now no longer in a situation to complain.—The transition from *Panaceas*, or universal remedies, to *Nosstrums* or *Specifics*, such, for instance, as are pretended to cure the *same* disease in *every* patient, is easy and natural. With the latter also, impositions of a dangerous tendency are often practised. It will probably be asked here, how far are they practically admissible, and in what cases are they wholly unavailing? It is not very difficult to answer this question. In those diseases, which in every instance depend upon the same cause, as in agues, the small-pox, measles, and many other contagious distempers, the possibility of specifics, in a limited sense, may

may be rationally, though *hypothetically*, admitted. But in other maladies, the causes of which depend upon a variety of concurrent circumstances, and the cure of which, in different individuals, frequently requires very opposite remedies, as in the Dropsy, the various species of Colic, the almost infinite variety of Consumptions, &c. &c. a specific remedy is an insolent burlesque upon the common sense of mankind. Those who are but imperfectly acquainted with the various causes from which the same disorder originates in different individuals, can never entertain such a vulgar and dangerous notion. They will easily perceive, how much depends upon ascertaining with precision the seat and cause of the affection, before any medicine can be prescribed with advantage or safety:—even life and death, I am concerned to say, are too often decided by the *first steps* of him, who offers or intrudes his advice upon a suffering friend.—The following instances will shew the danger attending the precipitate application of the same medicine in similar disorders.—A person violently troubled with the colic took a glass of juniper spirits, commonly called Hollands, from which he received almost instantaneous relief, as the affection proceeded from flatulency. Another person, who found himself attacked with similar pains, was induced by the example of his friend to try the same expedient; he took it without hesitation, and died in a few hours after.—No wonder, that the consequences here

were fatal, as the colic in the latter case was owing to an inflammation in the intestines. A third person was afflicted with a colic, arising from poisonous mushrooms, which he had inadvertently swallowed; the immediate administration of an emetic, and after it, some diluted vegetable acid, restored him to health. A fourth person had an attack of this malady from an *encysted hernia*, or an inward rupture. The emetic, which relieved the former patient, necessarily proved fatal to the latter; for it burst the bag of inclosed matter, poured the contents within the cavities of the abdomen, and thus speedily terminated his existence. Again, another had by mistake made use of arsenic, which occasioned violent pains, not unlike those of a common colic. A large quantity of sweet oil taken internally was the means of his preservation; whereas the remedies employed in the other cases would have been totally ineffectual. Here I willingly close a narrative, the recital of which cannot but excite the most painful sensations: to lengthen this illustration would lead me too far beyond my prescribed limits; since cases of this nature happen so frequently, that it would be easy to extend the account of them, by a long catalogue of interesting but fatal accidents.

What is more natural than to place confidence in a remedy, which we have known to afford relief to others in the same kind of affection? The patient anxiously inquires after a person, who had
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been afflicted with the same malady. He is eager to learn the remedy that has been used with success. His friend or neighbour imparts to him the wished-for intelligence. He is determined to give it a fair trial, and takes it with confidence. From what has been stated, it will not be difficult to conceive, that if his case does not exactly correspond with that of his friend, any *chance remedy* may be extremely dangerous, and even fatal.

The physician is obliged to employ all his sagacity, supported by his own experience, as well as by that of his predecessors; and, nevertheless, he is often under the temporary necessity of discovering from the progress of the disease, what he could not derive from the minutest researches. How then can it be expected, that a novice in the art of healing should be more successful, when the whole of his method of cure is either the impulse of the moment, or the effect of his own credulity? It may be therefore truly said, that life and death are frequently entrusted to chance*.

From

* The late Dr. HUXHAM, a physician of great celebrity, in speaking of *Asclepiades*, the Roman empiric, says: " 'This man from a *declaimer* turned *physician*, and set himself up to oppose all the physicians of his time; and the novelty of the thing bore him out, as it frequently doth the *Quacks* of the present time; and ever will, whilst the majority of the world are fools.' "

In another place, Dr. Huxham thus curiously contrasts the too timid practice of some regular physicians with the hazardous treatment, which is the leading feature of *Quacks*: " The timid,
low,

From what has been premised, it may be confidently asserted, that a nostrum or an universal remedy is as great a *desideratum* as the philosopher's stone, or perpetual and universal peace among men. This last, indeed, is not physically impossible; it only requires that mankind be uniformly disposed in their moral feelings. But an universal medicine can only be expected to obtain credit with the weak, the credulous, or the ignorant.

One of the most unfortunate circumstances in the history of such medicines, is the insinuating and dangerous method, by which they are *puffed* into notice. And as we hear little of the baneful effects which they daily produce, by being promiscuously applied, people attend only to the extraordinary instances, perhaps not one in fifty, where they have afforded a temporary or apparent relief. It is well known, that the more powerful a remedy is, the more permanent and dangerous must be its effects on the constitution; especially if it be introduced like many Patent-Medicines, by an almost indefinite increase of the doses*.

There

low, insipid practice of some," says this excellent man, "is almost as dangerous as the bold unwarranted empiricism of others; time and opportunity, never to be regained, are often lost by the former; whilst the latter, by a *bold push*, sends you off the *stage* in a moment."

* An Italian Count, uncommonly fond of swallowing medicines, found at length that he could take no more. Previously

to

There is another consideration, not apt to strike those who are unacquainted with the laws of animal œconomy.—When we intend to bring about any remarkable change in the system of an organized body, we are obliged to employ such means as may contribute to produce that change, without affecting too violently the *living powers*; or without extending their action to an improper length. Indeed, the patient may be gradually habituated to almost any stimulus, but at the expence of his palsied organs, and a broken constitution. Such are the melancholy effects of imposture and credulity! Were it possible to collect all the cases of sacrifices to this mysterious infatuation, it is probable that their number would exceed the enormous havoc made by the sword or the bayonet.

A popular and judicious writer, Dr. BUCHAN, makes the following curious remark on the subject in question: “As matters stand at present,” says he, “it is easier to cheat a man out of his life, than of a shilling, and almost impossible either to detect or punish the offender. Notwithstanding this, people still shut their eyes, and take every thing upon trust, that is administered by any pretender to Medicine, without daring to ask him a

to his death, he ordered the following inscription to be placed on his tomb:

“*I was once healthy; I wished to be better; I took medicine,
“ and died.”*

reason

reason for any part of his conduct. Implicit faith, every where else the object of ridicule, is still sacred here.”

If these abuses of medicines be of consequence; much more so are certain manners, habits, and customs, which the united efforts of the Faculty will never effectually remove or suppress, unless they be assisted by the female guardians of helpless infancy. That I may not be misunderstood with respect to the real intention of this address to the fair sex, I beg leave to observe, that the subsequent remarks apply chiefly to certain classes of the community, among whom a due degree of attention is but rarely paid to the skin of their offspring.

The greater number of our fashionable complaints and frailties are nearly related to each other. The gout, formerly a regular but rare disease, which attacked only the external parts of those advanced in years, has now become a constitutional indisposition, a juvenile complaint torturing the patient in a thousand different forms. The famous *Podagra* and *Chiragra* of our ancestors are now nearly obsolete, and instead of the gout in the *feet* or *hands*, we hear every day of the nervous gout, the gout in the head, and even gout in the stomach. No rank, no age, no mode of life seems to be exempt from this fashionable enemy.—The next and still more

more general malady of the times, is *an extreme sensibility to every change of the atmosphere; or rather a constantly sensible relation to its influence*. We are not only more subject to be affected with every current of air, every change of heat and cold, but the feelings of some are so exquisitely delicate, that in a close apartment, nay in bed, they can determine with accuracy the state of the weather, as well as the direction of the wind. By consulting their bodily sensations, these *living barometers*, more correctly than the artificial ones, announce not only the present, but even the future changes of the weather. I could never have believed, that this additional sense, which is only of modern origin, could be so much improved, had I not frequently witnessed the sensations of certain patients, when a cloud is floating over their heads;—a talent so peculiar to our age, that it would undoubtedly excite surprise, but no envy, in our less refined forefathers. In a climate, where the weather changes every day, and almost every hour, it may be easily imagined, how dependent, frail, and transitory, must be the health of the wretched possessors of this *new* sense; and that a being so organized cannot warrant, for a single hour, its state of health, its good-humour, its physical existence. Is it not then very probable, that many strange and inconsistent events of our days may have their secret foundation in this dependence on the weather?—In judging of man and his actions, we ought first to observe the state of
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the barometer;—as our more superstitious ancestors made the celestial constellations the criterion in their prognostics.

Not less characteristic in the present generation, but more painful, are the fashionable nervous and hypochondriacal diseases. These are formidable, insidious tormenters, which not only destroy our physical well-being, but also envenom our tranquillity and contentment, and cloud our fairest prospects of happiness. Without depriving us of life, they render it an insupportable burthen; without causing death, they make him a welcome visitor.

It is unnecessary to detail the diversified shapes, in which these maladies present themselves. Let it suffice to observe, that however intimately the mind appears to be connected with these phenomena, we can nevertheless account for them from certain physical causes. They have rapidly increased with the propagation of the gout, and experience shows, that they frequently alternate with the latter, in one and the same patient. It is highly probable, that they are of a similar nature with the gout; that they originate from the same source, which is peculiar to our age. Closely connected with the gout, and likewise with the hypochondria, how frequently do we not observe the hæmorrhoids, formerly a disease of the aged, now the companion of youth, and almost a general complaint.

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The last class of our fashionable diseases are properly all those affections of the skin, which are known by the name of eruptions, *discolorations*, *efflorescences*, *scorbutic taints*, &c. Of late these have alarmingly increased, and appear daily to spread every where, like noxious weeds. Even in the higher ranks, where neither a poor diet, nor want of attention to cleanliness, can be assigned as causes, we frequently observe persons, whose skin announces bad health, and a subject on whom medicine can have no effect. Physicians of different countries complain of new and unheard-of cutaneous disorders of an extremely malignant tendency; and if the spreading of these evils be not checked in time, Europe perhaps will once more be visited with that cruel and nauseating distemper, the Leprosy.

It is however not sufficient to give a bare catalogue of these singular affections. Let me attempt to trace them to their source; to shew that they can be easily prevented; and to point out the most likely means, by which this desirable event may be accomplished.—It is to you, guardians of future, and I hope hardier races, that I now appeal, and solicit your indispensable aid, in so important a measure of national and domestic policy.

Much as we hear and speak of *batbing*, and of the great attention at present paid to cleanliness, I am bold to affirm, that the greater number, if

not the whole of our fashionable complaints, originate from the want of care and proper management of the *skin*. Through unpardonable neglect in the earlier part of life, especially at the age of adolescence, the surface of the body is so unnaturally enervated by constant relaxation, that it oppresses, and as it were, confines our mental and bodily faculties; promotes the general disposition towards the complaints above alluded to; and, if not counteracted in time, must produce consequences still more alarming and deplorable.

We often hear people complain, that *their skin is uneasy*; a complaint, which I fear is but too prevalent among those, who give themselves little trouble to inquire into its origin.—But how is it possible, I hear many persons ask, that the skin, which is a mere covering of the body, to shelter it from rain and sun-shine, can have such influence over the whole frame? I shall venture to explain this problem, and hope to impress such as are inclined to be sceptical, with more respect for that part of the human body.

The skin unites in itself three very essential functions. It is the organ of the most extensive and useful sense, that of *touch*; it is the conductor of *perspiration*, the principal means which Nature employs to purify our fluids; and through the most admirable organization, the skin is enabled to *absorb* certain salutary parts of the surrounding atmosphere, and to guard us against the influence of
others

others of an injurious tendency. For this purpose, innumerable nerves and vessels are dispersed throughout the skin. They are in the continual act of feeling, and at the same time of secreting and volatilizing noxious particles, and absorbing those containing vital principles. It has been proved by accurate calculations made by the scale, that a healthy individual, daily and insensibly perspires upwards of three pounds weight of superfluous and hurtful humours. It may be confidently asserted, that no part of the body is provided with so many and important organs, by which it is connected with almost every operation performed in animal life, as the skin. It is this, which places us in the most immediate connection with the surrounding atmosphere, which through that channel particularly affects us, and exerts its influence on our health:—we further feel, directly through the skin, the qualities of the air, heat, cold, pressure, rarity, &c.; hence also we experience, at least in their influence, still other much more subtle and less known qualities, of which I shall only mention the electric and magnetic fluids. From the spiritual and highly penetrating nature of these fluids, we may easily conjecture, how considerable a share they must have in the principle of vitality, and of what important use the organ is, through which they affect us.

Important as the skin is to external life, it is no less so to the internal œconomy of the body, where

it appears to be peculiarly designed to preserve the great equilibrium of the different systems, by which the human frame is supported in its vital, animal, and sexual functions.—If any stagnation, accumulation, or irregularity arise in the fluids, the skin is the great and ever-ready conductor, through which the superfluous particles are separated, the noxious volatilized, and the fluids stagnating in their course relieved; a canal being at the same time opened for the removal of those humours which, if they should get access to the vital parts, such as the heart and the brain, would cause inevitable destruction. By the proper exercise of this organ, many diseases may be suppressed in their early stages; and those which have already taken place may be most effectually terminated. No disease whatever can be removed without the co-operation of the skin. The nature and constitution of this organ most certainly determine either our hope or apprehension for the safety of the patient. In the most dangerous inflammatory fevers, when the prospect of recovery is very faint, a beneficial change of the skin is the only effort, by which Nature almost succumbing relieves herself, and ejects the poison in a surprising manner, frequently in the course of one night. The greatest art of a physician, indeed, consists in the proper management of this extensive organ, and in regulating its activity, where occasion requires. To mention only one circumstance; it is well known to those who have

have experienced the beneficial effects of a simple blister, that the stimulus of it, not unlike a charm, has frequently relieved the most excruciating pains and spasms in the internal parts.

Cleanliness, flexibility, and activity of the skin are, according to the observations premised, the principal requisites to the health of the individual, as well as to that of whole nations. But instead of contributing the least to its improvement, we generally pay very little attention to it, except to the skin of the face and hands, which are made too often the *fallacious* index of health; yet it must be allowed, that the exceptions from this imputation are numerous. I am convinced, however, that most of the patients and valetudinarians, who take so much pains to refresh and fortify the *internal* surface of their body, by invigorating potations, rarely, if ever pay any regard to their *external* surface;—an object of equal importance, and perhaps standing in much greater need of those corroborants than the former. Hence it happens, that the skin of convalescents is observed to be particularly relaxed and obstructed; that they are exposed to continual colds, upon the least change of temperature; and that every day of their recovery renders them more liable to incessant relapses.

In this country, the children of people in the middling and lower ranks are perhaps better managed, than in most other countries upon the Continent; because frequent and daily bathing is, to my

certain knowledge, no where so generally practised as in England. As soon, however, as children attain a certain age, this practice is again as generally neglected: after the tenth or twelfth year of age, the surface of the body is very little attended to. Thus a foundation is laid for numberless evils, and particularly for that scorbutic taint in the human system, which is now almost universally prevailing, and which is more or less complicated with other and more fashionable complaints.—As we advance further in years, this disposition of the skin increases still more, particularly from the mode of life pursued in the higher ranks. We then begin to accustom ourselves to a sedentary life, to think, and to enjoy. The lady, the man of fortune, and the ill-fated man of letters, all of them require *more active* exercise, than they actually take, and which alone can promote a free perspiration, and enliven the surface of the body; but, by their indolent habits, the whole machine stagnates, and the skin becomes contracted and debilitated.

The husbandman, indeed, labours diligently in the sweat of his brow, and though his skin thereby preserves more life and activity, it is neither kept sufficiently clean, nor prevented from being obstructed by perspirable matter. The artist and manufacturer carry on their pursuits in a sedentary manner, in a confined, impure air; the latter, in the duties of his occupation, generally employs unclean articles, so that he at length loses the use of
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this organ entirely, in some parts of the body. The voluptuary and the glutton do not suffer less than the former, as they impair the energy of the skin by excesses of every kind, and take no precautions to preserve its elastic texture.—Our usual articles of dress, flannel excepted, are not calculated to promote a free perspiration;—our coal-fires, and particularly the large potations of *warm* liquors, contribute greatly to relax the skin. If we add to this list of predisposing causes, our own inconstant climate, which at one hour of the day braces, and at another relaxes the surface of the body, which alternately heats and cools it, consequently disturbs its uniform action; it will thence be easily understood, that the skin must for these reasons be almost generally vitiated, and that it really is a leading source of many of our fashionable indispositions. If, at the same time, we reflect upon its value, as it influences the whole of our animal œconomy, it is not difficult to conceive the particular connexion subsisting between this general depravation and its individual effects. When the sensation of the surface is impaired, when the myriads of orifices, that are designed for the continual purification and renovation of our fluids, are obstructed; if not closed;—when the subtile nervous texture is nearly deprived of its energy, so that it becomes an oppressive coat of mail;—is there any reason to be astonished, that we are so often harassed by a sense of constraint and anxiety, and that this uneasiness, in many

cases, terminates in a desponding gloom, and at length, in black melancholy?—Ask the hypochondriac, whether, before and during the most violent fits of mental debility, there does not always precede a certain degree of cold, paleness, and a spasmodic sensation in the skin; and whether his feelings are not most comfortable, when the surface of his body is vigorous, warm, and freely perspiring? In effect, the degrees of insensible perspiration are to him the safest barometer of his state of mind. If our skin be disorganized, the free inlets and outlets of the electric, magnetic, and other matters, which affect us at the change of the weather, are inactive; so that the origin of extreme sensibility towards the various atmospheric revolutions, is no longer a mystery. For, in a healthy surface of the body, no inconvenience will follow from such changes.—If further we advert to those acrimonious fluids which, in an imperfect state of perspiration, are retained in our body, and which settle upon the most sensible nerves and membranes,—we may the better apprehend, how the cramps or spasms, the torturing pains of the Gout and Rheumatism, and the most variegated cutaneous diseases, have of late become so obstinate and general.

The equilibrium of the fluids, and particularly the circulation of the blood, are also determined in no small degree by the skin; so that if this fluid become thick and languid, the whole momentum of the blood is repelled towards the interior parts.

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Thus a continual plethora, or fulness of the blood, is occasioned; the head and breast are greatly oppressed; and the external parts, especially the lower extremities, feel chilly and lifeless.

In warm climates, in Italy for instance, the hæmorrhoids, a very distressing complaint, are very rarely met with, notwithstanding the luxurious and sensual mode of life; because perspiration is always free and unchecked; while among us persons are found, who devote the whole of their attention to the cure of that troublesome disorder.

May we not infer, from what has been already advanced, that the use of baths is too much neglected, and ought to be universally introduced? It is not sufficient, for the great purposes here alluded to, that a few of the more wealthy families repair every season to watering-places, or that they even make use of various modes of bathing, either for their health or amusement. A very different method must be pursued, if we seriously wish to restore the vigour of a degenerated race. I mean here to inculcate the indispensable necessity for *domestic baths*, so well known among the ancients, and so universally established all over Europe, a few centuries ago, and which were eminently calculated to check completely the further progress of the leprosy;—a disease, though slower in its effects, yet not less distressing than the plague itself.

Much has been said and written upon the various methods, and the universal medicines, proposed in different

ferent ages, by different adventurers, professedly to diminish the inherent disposition to disease, and to provide a new and renovating energy for the human frame. At one time they expected to find it in the philosophic and *astralian salts*, at another in Magnetism and Electricity;—some fanatics pretended to have discovered it in the light of the moon, others in celestial beds;—but, if I may venture to deliver my opinion, we may search for it most safely and conveniently in every clear fountain, in the bosom of ever young, ever animating nature.

Bathing may be also considered as an excellent specific for alleviating both mental and bodily sufferings. It is not merely a cleanser of the skin, enlivening and rendering it more fit for performing its offices; but it also refreshes the mind, and spreads over the whole system a sensation of ease, activity, and pleasantness. It further removes stagnation in the larger as well as in the capillary vessels; it gives an uniform free circulation to the blood, and preserves that wonderful harmony in our interior organs, on the disposition of which our health and comfort so much depend. A person fatigued, or distressed in body and mind, will derive more refreshment from the luxury of a lukewarm bath, and may drown his disquietude in it more effectually, than by indulging in copious libations to Bacchus. The bath may be equally recommended as an admirable retiring place, to evade, for some time, the influence of the atmosphere; and persons that have
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the misfortune to be too susceptible of external impressions, would find no small benefit, were they to repair in a thick and sultry weather to the bath, where they breathe in an element less loaded with obnoxious particles.—The wish to enjoy perpetual youth, is one of the most predominant and pardonable among mortals. Though it cannot be rationally asserted, that bathing will confer continual youth, yet I will hazard an opinion, that it has a very uncommon and superior tendency to prolong that happy state; it preserves all the solid parts soft and pliable, and renders the joints of the body flexible. Hence it powerfully counteracts, what I presume to call an insidious disease, viz. *age*, and which consists in gradually exhausting the humours, and depriving the constituent parts of the human frame of their elasticity. It is no less certain, that bathing is one of the most efficacious means conducive to beauty; and that those nations, among which bathing is a prevailing practice, are usually the most distinguished for elegance of form and beauty of complexion.

A moderate desire to improve and beautify the surface of the body, is far from being a frivolous pursuit. It excites as much interest, and is productive of as beneficial tendencies, as the exertions of many a pseudo-philosopher, who devotes the toil of years, to arrange his notions in a certain systematic form, and who yet is not fortunate enough to attain the great object of his wish. I have
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had frequent opportunities to observe, that the desire of beauty, when not inordinate, may prove the source of many virtuous and laudable pursuits, and that it may be greatly instrumental to the preservation of health. I am also persuaded, that this desire is often pursued by methods not the most proper; and because we have not a just knowledge of beauty, we make many valuable sacrifices, not only of things relating to health, but sometimes of life itself. Instances are not uncommon, of young persons attempting to bleach their skins, and beautify their persons, by avoiding a free air, using a mild and weakening diet, long fasting, long sleeping, warming their beds, &c. &c. but, alas! the consequence did not answer their expectation,—they lost both health and bloom!—Eating chalk, drinking vinegar, wearing camphorated charms, and similar destructive means have been resorted to, by other more daring adventurers, but with no better success. Those I have last mentioned, may be called the *minor cosmetics*: others of a more formidable nature, I almost hesitate to pronounce, as they are unquestionably the most deleterious substances we are acquainted with. *Mercury* and *lead*, manufactured in various forms, are unhappily too common ingredients in many of our *modern cosmetics*, whether they consist of lotions, creams, powders, paints, or ointments. That these substances can be communicated to the circulating fluids, through the skin as well as by the stomach,

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requires,

requires, I should suppose, no further proof, after the doctrines already advanced on this subject. *Lead*, in particular, if once introduced into the system, though in the smallest proportions, cannot be removed by art, and never fails to produce the most deplorable effects; such as palsy, contraction and convulsion of the limbs, total lameness, weakness, accompanied by the most excruciating colic pains, and the like. Besides these more obvious effects, the frequent external use of lead and mercury, as cosmetics, occasions cramps in every part of the body, faintings, nervous weakness, catarrhs, tubercles in the lungs and intestines, which occur together or separately, according to the different circumstances, till at length a consumption, either pulmonary or hectic, closes the dreadful scene.

Beauty of the skin, the subject under consideration at present, is but another term for a sound and healthy skin;—a pure mirror of the harmony of the internal parts with their surface, or, if I may be allowed the expression, “*it is visible health.*”

There subsists so intimate a relation between our interior and exterior vessels, that almost every error or irregularity in the organs within, shows itself first of all on the surface without, and particularly on the face.—How often are we not struck at the aspect of a person, who yet thinks himself in perfect health, and in a few days an illness, the result of some morbid cause concealed in the body, justifies the serious apprehensions we entertained at

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our last interview. Nature has wisely ordained it, that the first appearance of internal irregularities is indicated by the countenance; but what use do we generally apply this index to?—We do not wish to avail ourselves of her beneficent intimation; and the continued use of pernicious substances, instead of promoting the object we have in view, will ultimately tarnish and impair that beauty, which we meant to adorn and preserve. We imagine it in our power to improve the skin, without attending to the purity of the fluids, although it is indebted to them for its very existence. You would smile at a person, who should attempt to cleanse an impure tongue, by constantly scraping it, when a disordered stomach is the real cause of that impurity.

From the tenor of the preceding positions, I hope for indulgence, when I venture to pronounce every cosmetic, whose composition is kept a secret from the public, false and fraudulent ware. The three great and really effectual SUBSTITUTES FOR COSMETICS*, which I would recommend, are the follow-

* To such readers, whether male or female, as are *determined* to make use of *cosmetics*, instead of attending to the more effectual means to preserve the bloom of the skin, it may be of service to point out one or two *external applications*, in order to prevent them from resorting to the dangerous and destructive contrivances of Quacks.—According to Dr. WITHERING, a physician of great eminence at Birmingham, an infusion of horse-radish in milk makes one of the safest and best cosmetics. Another preparation of clearing the skin of pimples and *recent eruptions*,

following: *First*; due attention to *insensible perspiration*; an important process this, by which nature, if duly assisted, will not fail to expel all acrimonious or useless particles. By this also the surface of the body will be kept in a constant atmosphere of softening exhalations,—a species of volatile vapor-bath, the most efficacious means of preserving it soft and pliant, and of animating it with the colour of life. The next circumstance to be attended to, is the *purity of the fluids*; this depends equally on a free *perspiration*, and on a vigorous state of *digestion*. The third requisite to a fair, healthful complexion, is an uniform distribution of the fluids; in other words, *a free and unrestrained circulation of the blood*; as the very purest fluids, when profusely determined to the face, are productive of disagreeable consequences, such as natural redness, flushings, tumid appearances, &c., of which ladies of a sedentary life are so apt to complain.

To these three general observations, I think, it may be necessary to subjoin a few particular injunc-

eruptions, if assisted by gentle aperient medicines, is the fresh expressed juice of house-leek, mixed with an equal quantity of sweet milk or cream.—Yet all contrivances whatever, to answer this purpose, are absurd and nugatory, if the *inward* state of the body be neglected, or if looked upon as *specifics of themselves*. Such things do *not* exist in nature; and we might as well try to bleach the face of a Negro, as to remove any scorbutic or other eruptions from the face, without bestowing proper attention to the whole state of the body, and particularly the fluids, from which these irregularities derive their origin.

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tions, relative to the improvement of the skin, as connected with a state of good health.—Carefully avoid all *immoderate* and *violent dancing*, as the sudden alternations of heat and cold, not only impair the general state of the skin, but are likewise of the greatest detriment to beauty.—Abstain from the too frequent and too copious use of heating liquors of every kind, particularly punch and strong wines. There is scarcely any substance which is, in my opinion, more destructive of the bloom of youth and manhood, than this *liquid fire*, which fills the blood with inflammable particles, propels them towards the face, parches the skin, renders it spotted, and lays the foundation of that incurable disease, which is by the French and Germans sarcastically called *copper*. Neither sugar, nor any additional ingredient to please the palate, can deprive these liquors of their noxious qualities, so that even the most agreeable of these seductive potions is attended with considerable danger.—Avoid, farther, every excess in *hot* drinks, as coffee, chocolate, tea, particularly the last, in which the people of this country are more liable to indulge, than in any other beverage. I scarcely dare venture to impeach this favourite *solace* of our morning and evening hours; but with all due deference to the charms of social virtue, I consider it as my duty to denounce the too liberal potations of this liquor, as not a little prejudicial to the fairness and purity of the skin. Tea taken hot, and in immoderate quantities, not only has a tendency to weaken the organs of digestion,

digestion, but it causes fluctuations and congestions in the humours of the face, and frequently brings on a degree of debilitating perspiration. Let us conceive the stomach inundated with a portion of warm water, just at the time of digestion; its concoctive powers are literally drowned at the very instant when their assistance is most required; and, instead of a pure balsamic *chyle*, or alimentary fluid, it prepares crude, and acrimonious humours, which can only generate an unhealthy mass of blood. Here, I cannot impress upon the attentive reader, in terms sufficiently strong, the following truth: *that a healthy stomach only can produce healthy and uncontaminated fluids*; and that two thirds of all that we call acrimony, or sharpness of humours in the system, proceed from a languid stomach, and irregular digestion.—If therefore the tea be made too weak, it will operate merely as warm water, and like it will greatly relax the coat and membranes of the stomach;—if made too strong, it will give an unnatural heat to the body, prove a dangerous stimulus to the nerves, occasion palpitations of the heart, universal trembling, cramps, with a number of other complaints, which it is needless to enumerate. 'That these effects do not immediately take place, during the first months or years of indulging ourselves in the intemperate use of hot and strong tea, is no argument to controvert this position;

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they will, either sooner or later, unavoidably follow.

I shall but slightly touch here, on another subject, scarcely of less importance than the former; namely, the various articles prepared by the pastry-cook and confectioner. These dainties might be less objected to, if any method could be devised of baking them without the pernicious ingredients of yeast and fat, substances which load the stomach with a glutinous slime and rancid matter, which obstruct the glands of the abdomen, particularly those of the mesentery, and which have a strong tendency to produce the cutaneous diseases before mentioned.

The *physical education** of infants unquestionably forms an object of the first importance. The great disproportion subsisting between healthy and diseased children, together with the deplorable mortality which occurs among the latter, too plainly evince, that their *bodily* welfare is not sufficiently attended to.

There is little room to doubt, that by a more rational mode of nurture, during the first years of

* To some readers it may be necessary to explain, that by *physical education* is meant the bodily treatment of children: the term *physical* being applied in opposition to *moral*.

infancy,

infancy, many subsequent diseases in life might either be wholly prevented, or at least greatly mitigated. Nothing perhaps would contribute more to meliorate education in general, than, what has been long and much wanted, a serious and minute attention of the Faculty to this particular branch of medical study; which at present, I am concerned to say, is almost totally neglected:

The few books extant on this subject; are neither written on scientific principles; nor calculated; by their manner and style; to afford plain and popular instruction: It is not enough for professional men, to plan systems of education in their study-rooms;—let them also demonstrate in practice, that they are familiarly acquainted with the *true* method of educating children;—a method which, in my opinion, implies somewhat more than merely prescribing and administering medicines.

So long as the nursing of children exclusively remains in the hands of common midwives and nurses, it is rather a matter of surprise, that so many infants should survive the age of childhood.—We ought therefore, above all things; to inquire into the monstrous prejudices prevailing in this essential part of domestic management, as the first step towards their extirpation:

How great would be my satisfaction, if, by the following strictures, I should be able to convince some ingenuous mothers, who possess sufficient fortitude, to shake off the bondage of old customs, or

modern fashions, and to return to the path of simple nature !—In a system of practical education, it is a judicious precept, which cannot be too much inculcated, *to omit rather than to undertake, or show ourselves too officious, in the medical treatment of infants.*

From the difficulty of discovering the true cause and seat of the complaints in children, especially if accompanied with any particular symptoms in the excretory vessels, it is very usual to administer a *gentle laxative* or *emetic*, upon the slightest occasion.—It would lead me too far to examine, in detail, the many ill consequences resulting from so absurd and detrimental a practice. I cannot, however, forbear to remark, that by dealing constantly in aperient medicines (a strange infatuation among the vulgar !) the future diseases of the child assume a particular character of the *gastric* kind, that is, by vitiating the juice of the stomach, which serves to concoct our food. For, as the operation of laxatives is in a manner mechanical, by impelling the fluids, and particularly those of the mucous kind, towards the stomach and bowels, and causing them to accumulate in a greater degree than usual, it will be easily understood, that by the frequent repetition of this stimulus, the gastric juice will be rendered unfit to effect the proper solution of food in the stomach. For the same reason, persons subject to frequent costiveness soon begin to complain of indigestion, when they once habituate themselves

to take ANDERSON'S, or any other aperient pills. Thus the stomach is converted, as it were, into a field of battle, where all the irregularities, that take place in the system, are left to fight their way; where the limits of disease and health, nay the alternative of life and death, are to be finally determined. That this however is not the most proper place for such a contest, requires no demonstration. The stomach is appointed by nature for very different purposes; it is the only organ of nourishment and assimilation; the source of restoration and health. But how can it effectually answer this end, if it serves, at the same time, as the constant laboratory of diseases? As it is always in a state of impurity, it cannot act with uniform energy and a sufficient degree of elasticity, to prevent frequent irregularities in digestion;—hence arise bad humours, hypochondriac affections, and nervous debility; all of which, I have reason to fear, are consequences, more or less, of tampering with medicines, and especially in the state of childhood. I am further induced to think, though it may to some appear rather bold, that more children are destroyed by the absurd practice of loading their tender stomachs with every sort of trash, and afterwards relieving them by repeated doses of physic, than by any other *natural* process. This likewise accounts for the disproportionate number of children, who die *in towns*, at a certain age, before

they become inured to such severe attacks made on their digestive organs.

In order to check and to prevent, if possible, this general tendency to diseases; to meliorate the constitution of children, by producing a more regular circulation of the fluids; and to direct the exuding morbid matter more universally and uniformly through the pores of the skin, a more effectual remedy cannot be suggested, than that of *frequent bathing*, and a very limited use of aperient medicines.

These observations are not conjectural, but founded on experience, and, it gives me pleasure to add, are confirmed by many physicians of eminent abilities, and extensive practice, on the Continent. I am further disposed to hope with confidence, that every judicious practitioner in this country also will, on mature deliberation, assent to the general tenor of the principles here advanced.

The practice of bathing in infancy is a powerful means of counteracting and suppressing the disposition to stomatic and bilious complaints, which in our days are uncommonly prevalent among children and adults, and which are frequently accompanied with diversified nervous symptoms. By the efforts of nature, to throw off malignant humours from the surface of the body, in consequence of a proper use of the bath,
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many of the causes of diseases in children may be safely prevented, catarrhs suppressed, or greatly mitigated, teething rendered easy, and the whole physical condition of the child considerably improved.

A question here arises, which is the most proper degree of heat in using the bath for children? —I shall venture to pronounce, upon the authority of the best modern authors, confirmed by my own experience and observation, that the *lukewarm bath*, between 84 and 96° of Fahrenheit's thermometer, rather more than new-milk-warm, is, upon an average, the most suitable temperature. An erroneous notion too much prevails, that the good effects of bathing are principally to be ascribed to the *cold bath*. The use of any bath, indeed, whether cold or warm, that is, the stimulating impression excited by the water, is, of itself, an excellent tonic, serving to brace and invigorate the whole system. Not to mention the comfortable sensations, that must necessarily attend the cleansing and opening so many millions of pores, with which the skin is provided, the water formerly considered as a *simple* element, is now pretty generally understood to be a *compound* body, which consists of *oxygen* and *hydrogen*, or vital and inflammable air, the former of which, it is well known, promotes the process of *respiration*, and literally feeds the vital principle in the human body. Although this assertion rests chiefly on an

hypothetical foundation, so much is certain, that a lukewarm bath, used for the legs alone, has been found, by experience, to communicate new spirits to the weary traveller, almost instantly to remove the sense of languor, and to re-animate all his faculties. *Bruce*, the Abyssinian traveller, remarks, that in the intense heat of that country, a lukewarm bath afforded him more refreshment and vigour, than a cold one. We ought farther to consider, that infants are accustomed scarcely to any other than a *warm* temperature. The cold bath belongs to the class of the *heroic remedies*, and in its sudden and vehement effects nearly resembles electricity. It is moreover an axiom in medicine, that the means of stimulating and corroborating the system, should be in proportion to the degree of vital power in the individual; that a faint spark may be extinguished rather than kindled by too violent a concussion of air; and that a degree of stimulus and invigoration, which agrees with a firm and robust body, may prove destructive to the weak and tender. It might therefore be extremely hazardous to employ a remedy, in the delicate frame of infants, which even adults cannot always resort to without precaution. I presume to go a step farther, and do not hesitate to say, that the use of the cold bath, in reference to the treatment of children, is even DANGEROUS. Its principal mode of operation is by contracting the whole surface of the body, and
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by causing a general repulsion of the fluids towards the internal parts. Hence in a young and infirm body, which has very little internal *reaction*, the necessary consequence of cold bathing will be an unequal distribution of the fluids, a partial or local stagnation of them; and, what is worst of all, an accumulation of humours in the head, by which infants are frequently injured, before it is in their power to complain.—The lukewarm bath, on the contrary, produces an uniform revolution and salutary purification of all the fluids. For these reasons, I consider the tepid bath as in every respect preferable, since it may be used somewhat cooler for strong children, or warmer for those of a weakly constitution; so that the requisite degrees of heat may be regulated according to the increasing age and strength of the child. In summer, the water intended for bathing ought to be exposed the whole day to the rays of the sun, which will impart to it an agreeable and congenial warmth. Rain, or river-water, is the most proper for this purpose; and if there be a necessity for using spring or well-water, it should be previously softened with a small quantity of boiled water, in which a quarter of an ounce of soap has been dissolved, with the addition of a little bran or oatmeal; and if milk can be had, it will be found a still more useful ingredient. Here I would particularly recommend not to boil the *whole* quantity of the water to be used for bathing; as it would in that case be deprived of its
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aërial constituents, which are not without their importance in the bath.—During the first weeks and months, the child should not be suffered to remain in the bath longer than five minutes, which time may be gradually increased to a quarter of an hour. During the whole process of bathing, the body should not remain inactive, but be gently rubbed with the hand, and afterwards cleaned with a soft sponge. It is of consequence to attend to the point of time, when the child is taken out of the bath; for in almost every instance, when warm bathing disagrees with the child, it will be found owing to neglect in not wiping and drying the body with sufficient expedition at this particular period. Hence it is highly necessary, to keep warm cloths in readiness, in which the child should be wrapped up, and dried, the very moment it is taken out of the bath. Every one in the habit of bathing must have observed, that the evaporation of water on the skin excites penetrating and uncomfortable sensations of cold; and there is an astonishing difference of temperature, between the actually being in the water, and the circumstance of having water on the skin after quitting the bath. If, therefore, a child, from want of due precaution, be kept for several minutes with a naked, wet body, it will be liable to contract a cold, the more dangerous in its consequences, as it immediately succeeds a state, in which the body is warm and the skin open.

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It should be further observed, that bathing, immediately after a meal, or with a full stomach, is highly improper, if not dangerous, both in children and adults; nor is it advisable, in rough weather, to carry a child into the open air too soon after bathing. The most proper time for using the bath, is the evening, when the child can be removed to bed, as soon as it is completely dried.

There is another species of bath, equally indispensable, which I will call the *Air-bath*; or the daily enjoyment of fresh air. This is usually considered as a promenade, or pleasure-walk; and as children cannot judge of its great utility, and the weather is not always favourable for excursions, parents are sometimes guilty of unpardonable neglect, in confining infants for whole days and weeks together within their rooms. But if air be essentially requisite to animate the most subtle powers of man, it follows, that it is as necessary to the organs of life as food and drink; and that its salutary influence on the constitution does not so much depend on the state of it with respect to pleasantness and serenity, as on its freshness and constant renewal. Hence I would impress it on the reader, as a rule not to be departed from, *to let no day elapse, without affording the child an opportunity of imbibing the salubrious qualities of fresh air.*—In the first months great precaution is necessary, and children born in spring or summer have in this respect no small advantages, as there is less danger in exposing

exposing them, during the warm months, to the open air, than there is in autumn and winter. In the milder seasons, too, violent winds, and moist weather, cannot be too carefully avoided. After the two first months of its existence, if the child has been duly habituated to fresh air, it may be safely carried out in *any* state of the weather: this ought to be regularly done every day, were it only for half an hour, as it is one of the most nourishing cordials that can be given. I shall just notice here, by the bye, the great benefit which the eyes of children derive from this practice, and which, particularly at a time, when the complaints of weak and sore eyes resound in almost every family, is of the utmost importance. It is an unquestionable fact, that the shortness of sight, and weakness of the eyes, so prevalent among the inhabitants of towns, is chiefly owing to the injudicious custom of confining children, during the first years of their lives, almost constantly within four walls; so that the eye, being accustomed to view *near* objects only, becomes organized for a narrow compass, and at length is rendered incapable of forming the focus properly for *distant* objects. On the other hand, it is equally certain, that by an early and daily practice of the organs of sight, in beholding remote objects, in the open air, the circle of vision is enlarged; the power of sight is sharpened, and a solid foundation laid for acquiring a clear and comprehensive discernment of objects.

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As a consequence from the preceding observations, it will be readily admitted, that the proper and daily airing of the nursery, in winter as well as in summer, is of no small importance to the well-being of children.—It has been proved by many fatal instances, that a confined and impure air alone is capable of exciting the most violent convulsive symptoms, and consequently is one of the principal causes, that so many infants die of convulsions, during the first months of their lives. Would it not be more eligible, to select the most airy apartment in the house for a nursery, than low and confined garrets, as is too frequently the case in large families? The room, in which children breathe, should at least be capacious and lofty, and exposed to the cheering rays of the sun, which not only influence the temper and spirits of children, but are an excellent mean of purifying the corrupted air in their apartments.

Persons unaccustomed to reflect on this subject, can scarcely conceive, what salutary effects the simple means here recommended, namely, the early habit of washing, bathing, and daily airing, produce on the constitution, and physical formation of the child. The habit of body, growth, and appearance of children, when properly managed in this respect, will be totally different from those, who are reared like foreign plants in a hot-house. To point out still more forcibly the peculiar advantages attending the former regimen, I shall here exhibit

exhibit a picture of such children, not taken from fancy, but authorized by facts, and according with the experience of modern observers, with my own; and that of a respectable physician in Germany, Professor HUFELAND of Jena.

1. A child thus treated is more hardy and less affected by the vicissitudes of climate and weather.

2. Its body is straight and robust; its limbs are uniformly muscular, and well-proportioned.

3. The stages of evolution, in its different organs, take place in regular succession;—no power, no capacity, outstrips another; its teeth do not appear too soon, nor at irregular periods; the child does not begin to walk too early nor too late; and the same order is observable with regard to speaking. Even the mental faculties expand themselves more regularly, that is, not too rapidly, but after the most important bodily changes have been effected. Every period of its progress to maturity comes on in a natural and gradual manner, so that the child, in a physical sense, remains longer a child;—it does not shoot up into manhood, before it has completed the proper term of youth; and thus every stage, as well as the whole career of his existence, is considerably prolonged.

4. By this treatment the circulation of the fluids, all internal motions, particularly of the lungs and intestines, together with the usual evacuations, are beneficially promoted. Of no less advantage is the bath to those children, that are subject to habitual
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costiveness; a distemperature which cannot be too much guarded against, not only during the age of childhood, but also through the whole life. Infants accustomed to the bath, and fresh air, are scarcely ever known to suffer from this complaint.

5. The texture of their muscular flesh becomes solid, the colour blooming, and the body neither appears tumid and spongy, nor parched and meagre. The complexion is lively and fresh;—the head and lower belly are in just proportion to the rest of the body, and the disposition to rickets, so common in many other children, is not perceived in them.

7. Neither are bathed children affected by that excessive sensibility and diseased irritability of the nervous system, which in many instances so fatally degenerates into spasms, fits, and convulsions. These irregularities, in early life, are chiefly instrumental in bringing on that pitiable state, in which some unhappy persons, through the whole of their lives, are little better than *loco-motive nervous machines*—organized beings, which appear to exist for the sake of *feeling only, not for acting*.

8. Diseases of the skin, eruptions, catarrhs, coughs, obstructions of the first passages, &c. are rarely observed to attack a child, that is properly treated; and if they do, their duration will be short, as the *crises* will, in this case, be easy and natural.

9. Those diseases in children, which are commonly called dangerous, as the small-pox, measles, scarlet fever, &c. and which are ultimately diseases
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of the skin, are greatly alleviated in their symptoms, and more easily to be overcome, when the skin is in full health and vigour;—but as the usual management of children deprives the skin of those properties, we need not be at all surprised at the danger and subsequent mortality of children, in the above-mentioned diseases.

10. The early practice of washing and bathing may be also recommended as tending to strengthen that sense of cleanliness, which is so praiseworthy and useful in itself; and which is not sufficiently cultivated among those nations, where the bath is in disuse.

The Russians, with all their ignorance and rusticity of manners, take the lead of the more refined French and Germans, both in a delicate sensibility of cleanliness, and in the practical use of the bath. I lately read of a foreign gentleman, travelling in Russia, who had hired one of the natives as his groom or postillion. After having travelled several days together in very sultry weather, the semi-barbarian upon his knees requested his employer, to grant him leave of absence for two or three hours to refresh himself with the luxury of a bath, which to him was indispensable, and the want of which he had long felt. The peasants in that country possess a refinement of sense, with respect to the surface of the body, with which the most elegant ladies in other countries seem totally unacquainted, but which, it is presumed, they would have no reason to blush at.

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I have frequently made a similar remark, with regard to children accustomed to the bath. Far from exhibiting those symptoms of uneasiness and terror manifested by other children at the sight of the water, they shew true love for that element; bathing is to them a source of real pleasure, and they eagerly await the moment when they are to be plunged into the water.

If, however, the means above stated are expected to produce their full effect, it should not be forgotten, that the *whole* management of the child ought to correspond and keep pace with the preceding practice. Without attending to this condition, the constant washing and bathing may not only prove of little service, but may in some instances be productive of mischief. Hence it is absolutely necessary to prohibit the use of feather-beds, cumbersome dresses, &c. and to avoid all suffocating rooms, whether occasioned by too great heat, or an offensive corrupted atmosphere.

There is no practice more detrimental to the powers and energy of man, in the first period of his evolution, than that of immediately sinking the tender infant in a heap of soft feather-beds. In this situation, all the organs become extremely relaxed, and we lay the foundation of a very serious malady, a *sweating skin*; the source of constant colds, tooth-ach, head-ach, catarrhs, and innumerable other complaints.

remarking, that this is perhaps the *only* province of parental care, in which we *never* can do *too much*. For this end, we ought not to neglect the article of linen, as the frequent change of it is of more consequence than many people are aware of. A child is much more liable to perspire than an adult; the natural effect of which will be, that its linen is more readily soiled and rendered unfit for wearing. All parents, therefore, who can afford it, I would advise to give their children clean, dry linen *every day*. An undoubted proof of the utility of this practice is, that instances have occurred of children being cured of the rickets, when, from the first appearance of that complaint, they have been daily furnished with clean linen, well dried, and occasionally smoked with juniper-berries, frankincense, or other perfuming substances, in order to expel the moisture, which is absorbed by linen. But if a clean change cannot be conveniently had every day, the night-shirt, as well as that of the day, ought to be regularly dried, and perfumed if necessary.

Lastly, let the dress of children be light; the head and breast during the first months may be covered, though very slightly; but as soon as the hair is sufficiently strong to afford protection, there is scarcely any necessity for hats or caps, unless in rainy and cold seasons. The breast and neck too, acquire more firmness, and are rendered hardier, by keeping them uncovered; as our fre-

quent colds and sore throats chiefly originate from the absurd habit of wearing bosom-friends and stiffened cravats. I shall conclude these observations with an historical account from HERODOTUS, which clearly illustrates the advantage attending the cool regimen of the head. This judicious and learned writer informs us, that after the battle fought between the *Persians*, under CAMBYSES, and the *Ægyptians*, the slain of both nations were separated: and upon examining the heads of the *Persians*, their skulls were found to be so thin and tender, that a small stone would immediately perforate them: while, on the other hand, the heads of the *Ægyptians* were so firm, that they could scarcely be fractured by the largest stones. The cause of this remarkable difference Herodotus ascribes to the custom of the *Ægyptians*, to shave their heads from the earliest infancy, and to go uncovered in all states of the weather; whereas the *Persians* always kept their heads warm, by wearing heavy turbans.

It is much to be wished, that the rules and observations, here submitted to the candid reader, so far as they are found to accord with reason and experience, were more generally understood and practised. I am not however disposed to imagine, that plans of *sudden* improvement are the most likely to succeed; and I am well aware of the difficulties we must expect to encounter, when we attack old and rooted prejudices, with the hope of
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vanquishing them *at once*. For though I should be fortunate enough to substitute sounder opinions and better practices, in lieu of those already established; yet, unless the mind be prepared for such changes, by a proper philosophic culture; nothing is more probable, than that a speedy relapse into former errors will be the necessary consequence. The history of our own time has, in some recent instances, evidently confirmed the truth of this observation. We find even the mandates of arbitrary power insufficient, to produce a thorough reform in the manners and customs of a superstitious people. The philanthropic JOSEPH II. was obliged to yield to the torrent of popular prejudice; and, in spite of his better reason, frequently to repeal measures dictated by the enlightened genius of philosophy. His obstinate and infatuated subjects were not fully ripe for such salutary innovations. Our age is scarcely docile enough to pursue those improvements, which a rapid and continual progress in the sciences is daily suggesting to us. Upon this ground alone we can explain the frequent and obvious contrast, found between the prevailing theories and practices, both in the higher and lower walks of life. A great majority of the common people, from their unaccountable indifference to literature, and their aversion to serious reflections, still manifest their ancient prejudices to every thing, which falls under the description of novelty or improvement. More than one generation will probably

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elapse, before even a part of the useful hints can be realised, which lie dispersed in the later writings on subjects of health and domestic œconomy.—Whatever benefits can be attained by popular instruction, both with regard to the treatment of children and adults, must be introduced in a gradual manner. The ancient treatment of children, being consecrated by time immemorial, must not be rudely and precipitately rejected; but old customs may be changed by prudent and moderate management; and thus we may proceed from one step to another, in extending the boundaries of truth and reason. A gradual transition, from a faulty to a better state of things, is commonly the most permanent. Let us combat, at first, the most dangerous notions and prejudices: the conquest over a *single* prejudice, if it be completely extirpated, is a triumph of no little moment; inasmuch as it will shake the foundation of many others, more or less connected with it.

In my earnest endeavours to caution the reader against inveterate prejudices, I do not mean to insinuate, that a perfect and permanent state of health is compatible with the delicate organization and complex functions of the human body: I am well aware, that the most healthy condition of it closely borders on disease, and that the seeds of distempers are already planted in the very fullness or luxuriance of our fluids.—Hence no *absolute* perfection is to be found among mortals, whether

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we consider them in a physical or moral state. CICERO illustrates this position, when speaking of man as a moral agent, with equal truth and energy, in the following words: "He is not," says this philosophical orator, "the most virtuous man, who commits *no* faults; but I consider him as the most virtuous, whose conscience reproaches him with the *fewest*."



CHAP. I.

A practical inquiry into the means and plans adopted among different nations, with a view to prolong human life.—An historical survey of this interesting subject, in different ages; together with the success which has attended the respective efforts made by nations and individuals.—A brief statement of the conditions requisite to the attainment of a long and healthy life.—Observations, rules, and cautions deduced from the experience of ages.—Symptoms of actual dissolution.—Summary account of a dietetic system; explanation of its design, and the vast diversity of objects comprehended under this science.

As the enjoyment of ‘a sound mind in a sound body’ is one of the greatest of terrestrial blessings, it is incumbent on every rational inquirer, to devote some portion of his time and industry to the research of such useful and practical objects, as may contribute to improve and insure so desirable a state.

As long as the various functions of the human body, the voluntary as well as the involuntary motions, are performed with ease, and suffer no interruption, we usually pronounce the body to be
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be in a state of health ; in the contrary case we call it diseased. I shall advance a step further, and assert, that when we do not feel ourselves encumbered with the weight of our own frame, and when we are not disposed to reflect, with uneasiness and solicitude, upon the physical condition of it, then we have a right to consider our health as being perfectly established.

Although we are liable to suffer from the attacks of disease, in a variety of shapes, yet we have abundant reason to contemplate with satisfaction the chequered portion of life, that is fallen to our share ; for, even in the present imperfect state of things, we find comforts more than sufficient to counterbalance our sorrows. Considering the innumerable accidents, to which we are daily and hourly exposed, it is a matter of just surprise, that frail, imbecile man should remain in health during the greater part of his life ; and still more so, that, upon an average, the number of healthy individuals should be found to exceed by far those in a contrary state. If we further advert to the thoughtless manner, and the want of circumspection, which mark the conduct of man in general, in the treatment of the body, our astonishment will necessarily increase, that he so often escapes the dangers prepared by his own hands. But parental Nature frequently repairs the injury, though we are not conscious of her salutary efforts. She powerfully co-operates, when art is called in aid,
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to restore that harmony and order in the system, which had been imprudently or inadvertently disturbed. It is to healing nature, that we are principally indebted, if the sufferings resulting from ignorance or obstinacy are less severe, than the extent of the mischief seemed to portend.

It cannot be expected, that persons unacquainted with the œconomy of the human frame should be able to discriminate between internal and external causes, and their effects. Where a competent share of this knowledge is wanting, it will be impossible to ascertain, or to counteract, the different causes by which our health is affected; and should a fortunate individual ever fix upon a suitable remedy, he will be indebted to blind chance alone for the discovery.

This has been the case in all ages, and alas! it is still deplorably the case. Remedies have from time to time been devised, not merely to serve as *Nosstrums for all diseases*, but also for the pretended purpose of *prolonging human life*. Those of the latter kind have been applied with a view to resist or check many operations of nature, which insensibly consume the vital heat, and other powers of life, such as respiration, muscular irritability, &c. Thus, from the implicit credulity of some, and the exuberant imagination of others, observations and experiments, however discordant with sound reason and philosophy, were multiplied, with the avowed design to establish proofs or refutations of this

this or that absurd opinion. In this manner have fanaticism and imposture falsified the plainest truths, or forged the most whimsical claims; so that one glaring inconsistency was employed to combat another, and folly succeeded folly, till a fund of materials has been transmitted to posterity, sufficient to form a concise history of this subject.

All men, in all ages, have set a just value on long life; and in proportion to the means of enjoying the same, this value has been felt in a greater or less degree. If the gratification of the sensual appetite formed the principal object of living, the prolongation of it, to the Epicure, would be as desirable, as the prospect of a life to be enjoyed beyond the limits of the grave, is to the moralist and the believer.

In the Old Testament, the promise of a long life was held up as one of the most important sources of consolation: and, conformably to the principles of Christianity, a patient continuance in well-doing, or, in other words, a long life rich in good works, can best insure the hope of a more happy state in a future world. Hence the wish of a speedy termination of our existence here, is one of those eccentricities, into which only persons deprived of reason are liable to be drawn, either from exorbitant anxiety, or the want of mental fortitude. The desire of longevity seems to be inherent in all animal life, and particularly in human nature: it is intimately cherished by us through the whole of
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our existence, and it is frequently supported and strengthened, not only by justifiable means, but also by various species of collusion.

The possibility of prolonging human life was never doubted by the Orientals, even in the earliest ages. One of the most ancient methods on record, is that of placing the aged and decrepit in the vicinity of an atmosphere, replete with the exhalations of blooming youth. It is not improbable, that a certain custom then prevailing in the East, by alluring the fancy with beautiful images, and by imposing upon the understanding through poetical fictions, first induced man to entertain this singular notion. The bloom of a juvenile age, and particularly the healthful virgin, was compared, by the Orientals, with roses, lilies, and other elegant flowers; she was introduced in allegorical description, to represent odoriferous spices, balms, and oils, and was made the subject of praise in particular poems or pastorals. How easy, then, the transition from conjecture to belief, that the exhalations of vigorous and healthy persons must be highly conducive to the support of exhausted old age; that they were capable, like the fragrant balms of the East, to soften the rigidity of the fibres, to excite the vital spirits, and, in fine, to supply the aged with a fresh stock of health. The history of KING DAVID furnishes us with a striking illustration of this renovating process.

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In the writings of the ancient physicians, we meet with various accounts, from which we learn, that this method has been a favourite resource of invalids, worn out with age. Modern physicians also mention this practice, and the celebrated BOERHAAVE informs us, that he advised an old and decrepit burgomaster at Amsterdam, to sleep between two young persons; and that his patient, who before was sinking under the weight of infirmities, obviously recovered strength and cheerfulness of mind.

The great age of some schoolmasters has likewise been ascribed to the benefit they derive from breathing, almost constantly, among young and healthy children. It has been farther observed, that young persons, if they sleep in company with the aged, become lean and enfeebled.—Upon more accurate inquiries, however, it is pretty evident, that most of the benefits (perhaps all of them) which the aged borrow from this expedient, may be placed to the account of the imagination, and its surprising effects on the body. It is this power which, in my opinion, renews the languishing flame of the aged, and which may preserve them for some time longer in that renovated state, provided it be supported by a proper attention to diet and other circumstances.—We frequently see a debilitated and peevish old man assume a complacent smiling aspect, when a sprightly agreeable maiden addresses him in the language of courteous pleasantry.

santry. The most charming images re-appear before him ; his imagination is wholly employed with them ; and the powers of life are, as it were, again collected, and directed to one object. That such means of re-animating old age, may have a favourable effect on health, cannot be disputed.

To imagine, however, that the vigour of health, and the bloom of youth can be transfused by insensible perspiration, or exhalation, into the body of the aged, is to labour under a very palpable mistake. I shall prove, in the next Chapter "Of Air and Weather," that every living being necessarily corrupts the air more or less by its respiration ; and that the atmosphere, thus impregnated, becomes unfit for other beings, to breathe in ; because every breath we emit, contains certain particles, which are separated by the lungs, as being useless and noxious to the body. How then is it conceivable, that matters or substances should be hurtful to one body, if retained in it, and useful to another, if communicated to it ? Or was it perhaps supposed, that the *watery parts* of insensible exhalation from the young body, could moisten and refresh the parched fibres of the aged ? To accomplish this purpose, we are possessed of remedies, much purer and more effectual. Natural warmth or heat, therefore, is the only means competent to produce such a salutary effect ; as this alone is capable of exciting the slumbering energy of life. And in this respect, I apprehend, we ought to do
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justice to the above-described method practised by the ancients.

When young persons live or sleep with old people, and are observed to grow thin and infirm, (which however is not always the case,) this proceeds from another circumstance, namely, that the former absorb or inhale the noxious particles of the latter; but from this it by no means follows, that the aged body attracts the vital principle from the younger. Although free *caloric*, or matter of heat, may probably pass over from the young body into that of the aged; yet this transfusion, under certain circumstances, would be rather to the advantage than disadvantage of the former (the young body); inasmuch as this deprivation of superfluous caloric is not unfrequently found to be serviceable and wholesome.

From the preceding remarks we may the better conceive, how it happens, that a school-room filled with the various exhalations of children, cannot conduce to the prolongation of life; and, consequently, that the great age of certain schoolmasters must be ascribed to some other cause. An accurate account of the mortality, prevailing among that class of men, would satisfactorily demonstrate, that the age of schoolmasters is in a just proportion to that of other classes of society.

I now propose to consider several other plans, that have been adopted for the prolongation of human life.

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The Egyptians, who lived in a country rendered unwholesome by intense heat and frequent inundations, could not long remain ignorant, that their northern neighbours, the Greeks, attained to a much greater age, than they themselves did. After many fruitless attempts, to discover the true cause of their short life, and to provide the means of removing that cause, they at length were fanatical enough to imagine themselves possessed of the grand secret for prolonging life, in the constant use of sudorifics and emetics. The air of Egypt, being impregnated with aqueous and putrid particles, not only checked the process of perspiration, but also generated various epidemic distempers. In such cases, sudorific medicines were necessary and proper; and even emetics, by exciting a forcible commotion through the whole system, not unfrequently restored the activity of the cutaneous vessels, and thus produced a favourable effect in those maladies. Further, the heat of the climate inspissated their fluids; this circumstance connected with their usual mode of life, and their crude articles of food, necessarily brought on an excess of bile, which overflowing the stomach upon the least occasion, could not fail, sooner or later, to occasion very obstinate diseases. The emetics, therefore, being eminently qualified to evacuate the bile, would of course obtain general reputation among the Egyptians. These and the sudorifics were for a long time considered as specific remedies; from their tendency to expel

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the noxious matter dangerous to life ; and because in those ages diseases were accounted to be the *only* enemies to life,—the Egyptian physicians and philosophers not being able to distinguish between effects and their causes, the latter of which existed in the pestilential vapours of a hot climate.

Thus it became a custom to take at least two emetics every month ; to inquire of acquaintances and friends, how those medicines had operated, and to wish each other joy upon these occasions. I need not observe, that this singular method of prolonging life is not to be recommended as worthy of imitation ; but that it chiefly belongs to the department of the physician, to determine when and in what degree such medicines are to be administered.

The Greeks lived in a more romantic and picturesque country ; their conceptions with regard to the structure and functions of the human frame were more correct and conformable to nature. Their philosophers and physicians were more enlightened and less prejudiced than those of Egypt ; they were not, like the latter, under the capricious influence of a wild imagination, too frequently disordered by the effects of BLACK BILE. Charming nature, displayed in the sublime and beautiful scenery of their country, every where invited them to the enjoyment of free and pure air ; the effects of this on their susceptible nerves, combined with an excellent system of bodily exercise, proved the best specific for counteracting the effects of time,
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and thus prolonging their active, healthful lives. For this great and beneficial purpose, particular methods and rules were contrived, in order to give the body the most varied and powerful, yet gentle motions ;—these athletic exercises were judiciously adapted to the different constitutions, situations; and ages of life, so that the sagacious Greeks arrived at an extraordinary degree of perfection in this art. The whole of that highly useful branch of education was reduced to a regular system, and is well known amongst us by the name of *Gymnastics*.

The great advantage of such a course of bodily exercise cannot be disputed, when we consider, how many individuals in all countries die prematurely from want of activity, motion; and nervous energy; though their organization may be in no respect faulty. Besides, a body inured to frequent and laborious exercise, will not be easily affected by external causes of disease; being secured; as it were; by a coat of mail, against the attacks of many acute disorders.

The Greeks carried, to a still higher degree, the system of gymnastic motions. By the same method they attempted to cure diseases in their first stages, not excepting such as were already formed, and to put a stop to their further progress. They caused the patient to move in various positions; they applied gentle friction on the whole surface of the body; and used different methods to overcome the

languor of the muscles, by exciting and stimulating the muscular energy.

In relaxed, weakly individuals, whose organization is deficient in the proper degree of tension or elasticity, this method must be allowed to possess great advantages;—but I do not conceive it necessary to prove here, that it cannot be consistently applied to *all* diseases. It is not to be supposed, that the weary traveller can be either strengthened or refreshed by repeated forced marches.

The modern methods of bracing the human body, such as frequent bathing in cold water, exposing the body to all the vicissitudes of climate and weather, the various modes of supporting bodily fatigue, as travels on horseback and on foot, &c. which are so indiscriminately recommended to our aspiring youth, cannot in every instance fortify and render the human frame indestructible:—on the contrary, *all such violent efforts* have a tendency to bring on the symptoms of age, at a much earlier period than it ought to appear; as the joints and muscles are consequently rendered liable to contract an uncommon degree of stiffness and rigidity. —To load tender youth with burthens disproportionate to their age, and to impose upon them the tasks of men, can never be the most proper means of hardening and preparing them for a long and active life.

A distinction, however, should be made here, between bracing the *fibres*, of which all solid parts
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of the body consist, and bracing the sense of *touch* or *feeling*. The animal fibres may be solid, but should not be so rigid as to become insensible; a certain degree of irritability is necessary to the proper exercise of their contracting and relaxing power. If, further, there should exist in the body a disposition towards rigidity and insensibility, any artificial modes of bracing it will be of a dangerous tendency. If, on the contrary, the fibres should be too irritable, the Grecian method may, in that case, be resorted to with safety and advantage. A striking instance of this occurs in the history of Captain Cook. On his arrival in the Friendly Islands, he was seized with an acute rheumatism, attended with excruciating pains. He was soon relieved from this torturing situation, by an easy and instinctive process, which the Islanders generally followed on such occasions. For that purpose, they placed him on the floor, and did not cease to employ continued gentle frictions, till the violence of the pain had subsided. Thus a few untutored persons completely effected, what could not have been sooner, nor more easily accomplished by the systematic art of the learned.

From these considerations we may safely infer, 1. That the cold bath, gymnastic exercises, bodily fatigue of any kind, and all expedients to brace and invigorate the constitution, ought only to be adopted under certain limitations, *i. e.* with a proper regard to particular cases and circumstances:

and, 2. That these austere remedies cannot and ought not to be universally nor indiscriminately recommended, as methods of prolonging life.

Let us not, however, disparage the merits of that ingenious race of men, whom we only know from their inimitable works. For although the method of the Greeks cannot be safely introduced among us, without many and great exceptions, we must do them the justice to allow, that in their operations of hardening the human body, they proceeded in a more cautious, gradual, and judicious manner, than the moderns seem willing to submit to. Sudden changes of any kind produce a sort of revolution in the body, and this is necessarily attended with a waste of strength, proportionate to the violence of the shock.

Plutarch possessed clear and rational ideas on the subject of preserving and prolonging human life; he confirmed the truth of them by his own experience, during a series of many happy years. He advises, to keep the head cool and the feet warm, not immediately to take medicines on every slight indisposition, but rather to let Nature relieve herself by fasting a day, and in attending to the mind, never to forget the body. Much learning is compressed in these golden precepts, which will be valuable so long as human nature remains the same. The attention bestowed upon the mind, however laudable, should not authorise us to neglect the care of the body; the intimate connection subsist-

ing between both requires a due proportion of care and attention to be paid to each. In the same degree as a diseased body sympathetically torments the mind, so does an infirm mind agitate and harass the body; and such tortures and reciprocal affections are unavoidably attended with the consumption of animal life.—What Plutarch enjoins, with respect to keeping the head cool and the feet warm, is agreeable to reason and experience; we should not, however, imagine, that the grand secret of prolonging life consists in the sole observance of these maxims. The head and feet are not the only points, in which life is concentrated; they may indeed have a beneficial or pernicious influence on the whole body, and in this respect they demand a share of our attention; but no other part ought on that account to escape our notice.

I now enter upon a very unpleasant task, namely, that of reviewing a millenium of darkness, during the barbarity of the middle ages, when the progress of real knowledge was obstructed by the most absurd fancies and childish conceits; when conjectures, caprices, and dreams supplied the place of the most useful sciences, of the most important truths. Chemistry, so essentially requisite to explain the phenomena of known and unknown substances, fell into the hands of jugglers and fanatics; —their systems, replete with philosophic nonsense, and composed of the most crude, heterogeneous materials, served rather to nourish superstition than

to establish facts and illustrate useful truths. Universal remedies, in various forms, met with strenuous advocates and deluded consumers. The path of accurate observation and experiment was forsaken; far from penetrating into the mysterious recesses of Nature, they bewildered themselves in the labyrinth of fanciful speculation; they overstepped the bounds of good sense, modesty, and truth, and the blind led the blind.

The prolongation of life, too, was no longer sought for in a manner agreeable to the dictates of Nature; even this interesting branch of human pursuits was rendered subservient to Chemistry, or rather to the confused system of Alchymy. *Original matter* was looked upon to be the elementary cause of all beings; by this they expected literally to work miracles, to transmute the base into noble metals, to metamorphose man in his animal state by chemical process, to render him more durable, and to secure him against early decline and dissolution. Millions of vessels, retorts, and phials were either exposed to the action of the most violent artificial heat, or to the natural warmth of the sun; or else they were buried in some dunghill or other fetid mass, for the purpose of apprehending this *original matter*, or obtaining it from putrescible substances.

As the substance called Gold always bore the highest value among metals, these mongrel philosophers concluded, from a ridiculous analogy, that
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its value, with respect to the preservation of health, and the cure of diseases, must likewise surpass that of all other remedies. The nugatory art of dissolving it, so as to render it potable, and to prevent it from being again converted into metal, employed a multitude of busy idiots, not only in concealed corners, but in the splendid laboratories of the palaces of the great. Sovereigns, magistrates, counsellors, and impostors were struck with the common frenzy, entered into friendship and alliance, formed private fraternities, and sometimes proceeded to such a pitch of extravagance, as to involve themselves and their posterity in debts. The real object of many was, doubtless, to gratify their avarice and desire of aggrandisement: although this sinister motive was concealed under the specious pretext of searching for a remedy, that should serve as a tincture of life, both for the healthy and diseased. Yet there were some among these whimsical mortals, who were actuated by more honourable motives, and zealous only for the interests of truth, and the well-being of their fellow-creatures. The common people in some countries, particularly Italy, Germany, and France, often denied themselves the necessaries of life, to save as much as would purchase a few drops of the tincture of gold, which was offered for sale by some superstitious or fraudulent chemist: and so thoroughly persuaded were they of the efficacy of this remedy, that it afforded them in every instance the most confident and only hope of recovery. These
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beneficial effects, however, were promised, were looked for in vain. All-subduing death would not submit to be bribed with gifts, and disease refused to hold any intercourse with that powerful deity, who presides over the trade and commerce of nations.

As, however, these diversified and almost numberless experiments were frequently productive of useful inventions in the arts and manufactures; and as many a chemical remedy of real value was thereby accidentally discovered, the great and general attention to those bold projectors, was constantly kept alive and excited. Indeed, we are indebted to their curious operations, or rather perhaps to chance, for several valuable medicines, the excellence of which cannot be disputed, but which, however, require more precaution in their use and application, and more perspicacity and diligence to investigate their nature and properties, than the original preparers of such articles were able or willing to afford.

All their endeavours to prolong life, by artificial means, could not be attended with beneficial effects; and the application of the remedies thus contrived, must necessarily, in many cases, prove detrimental to the health of the patient. In proof of this assertion, it will be sufficient to give a slight sketch of the different views and opinions of the Goldmakers, Rosacruzians, manufacturers of Astralian Salts, of the drops of life, and tinctures of gold,

gold, hunters after the philosopher's-stone, &c. &c. Some of these enthusiasts fancied life to resemble a flame, from which the body derived warmth, spirit, and animation. This flame they purposed to cherish and to increase by their remedies, supplying the body with materials to feed the same, as we pour oil into a burning lamp.

Others imagined they had discovered something invisible and incorporeal in the air, that important medium in supporting the life of man. They pretended to catch, to refine, and so to reduce this undefinable something, that it might be taken by the mouth, and swallowed in the form of powders or drops; that by its penetrating powers it insinuated itself into the whole animal frame, invigorating and qualifying it for a longer and healthier duration than usual.

Others again were foolish enough to imbibe a notion, that they could divest themselves of the properties of matter during this life; that in this manner they might be defended against the gradual approaches of dissolution, to which every animal body is subject; and that thus fortified, without quitting their terrestrial tabernacle, they could associate at pleasure with the inhabitants of the world of spirits.

The Sacred Volume itself was interpreted and commented upon by the Operators and Alchymists, with a view to render it subservient to their interested designs. Undeniable historical facts recorded

corded in this invaluable book, were treated by them as hieroglyphical symbols, which contained chemical processes: and the fundamental truths of the Christian Religion were applied, in a wanton and blasphemous manner, to the purposes of making Gold, and distilling the Elixir of Life.

The productions of Alchymy, far from answering the purpose of prolonging life, have rather a tendency to shorten the thread of it. All the remedies which it affords, are of a heating and stimulating nature. The person who takes them will, no doubt, feel himself more cheerful for some time, and on that account he may fancy himself more vigorous and juvenile; as they certainly give an additional impulse to the sensations of life, like wine, spirits, and all other stimulants. But this increase of the *sensation of life* should by no means be confounded with an increase of the *power of life*. It may be even safely affirmed, that by the increase of vital sensations, the career of life itself is accelerated, as the consumption of it is the sooner exhausted; consequently the duration of the body is necessarily shortened.

I should not omit to mention, that these remedies strongly increase the sensitive power of man, *i. e.* they predispose him to sensual pursuits, stimulate him to commit excesses of every kind, draw him on to continual or excessive exercise, as dancing, and the like, and thus by inevitable consequence hasten the waste and dissolution of the body. That, for instance, which, according to the natural course,

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ought to be expended or consumed in three days, is dissipated perhaps in as many jovial hours. This premature loss is attended with relaxation, *ennui*, and sometimes even aversion to life, till a new dose of stimulants shall reproduce the former false vivacity. It fares with the patient here, as it does with the hard drinker, who trembles in the morning that follows his nightly debauch, feels his whole frame relaxed, inactive, and torpid, and is in a manner obliged to take a fresh dram of his favourite liquor, before he can enter on any serious business, with pleasure or effect.

These famous essences, balms, tinctures of life, &c. are further dangerous, as they contract the small vessels, so necessary to the preservation of life, as well as to the reparation of the losses sustained, and thus render them unfit to perform their offices. Hence arise rigidity or stiffness, and exsiccation; the body shrivels, and the symptoms of old age appear at an earlier period, than they would otherwise have done. Man is seldom unprovided with the supplies of vitality;—every draught of air we inhale, and every particle of food we swallow, is a fresh accession to the stock of life. But as soon as the *susceptibility* or *power of receiving* those supplies becomes languid, we then may be considered as unfit to perform the functions of life; and all the medicaments of nature and art will prove unable to relieve us. He who searches for the supplies of life in alchymical productions, elixirs,

elixirs, balsamic essences, &c. will sooner or later, but always prematurely, experience the want of this susceptibility. Even that impudent boaster and celebrated *insurer of lives*, THEOPHRASTUS PARACELSUS, although he pretended to have in his possession the stone of immortality, died—in his fiftieth year! His vegetable sulphur was a heating and stimulating remedy, partly similar to the Anodyne Liquor of Hoffmann.

The world of spirits also was invaded, and summoned, as it were, to contribute to the prolongation of human life. Spirits were supposed to have the rule of air, fire, earth, and water; they were divided into particular classes, and particular services ascribed to each of them. The malignant spirits were opposed and counteracted by various means of prevention: the good and tutelary were obliged to submit to a sort of gentle, involuntary servitude. From invisible beings were expected and demanded visible means of assistance—riches—health—friends—and long life. Thus the poor spirits were profanely maltreated, nay they were sometimes punished, and even miserably flogged in effigy, when they betrayed symptoms of disaffection, or want of implicit loyalty.

As men had thus, in their weakness and folly, forsaken the bounds of this terrestrial sphere, it will easily be believed, that with the help of an exuberant imagination, they would make a transition to the higher regions—to the celestial bodies
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and the stars, to which indeed they ascribed no less a power than that of deciding the destinies of men, and which, consequently, must have had a considerable share in shortening or prolonging the duration of human life.—Every nation or kingdom in our sublunary world was subjected to the dominion of its particular planet, the time of whose government was determined ; and a number of ascendant powers were fictitiously contrived, with a view to reduce under its influence, every thing which was produced and born during its administration.

The professors of astrology appeared as the counsellors and confidents of these invisible rulers ; and they very well understood the art of giving a respectable appearance to this usurped dignity. Their intimacy with those arbiters of fate was such, that, provided they could but ascertain the hour and minute of a person's birth, they confidently took upon themselves to predict his mental capacities, future vicissitudes of life, diseases, together with the circumstances, the day and hour of his death. Not only the common people or the less informed classes of society, but the most respectable men of those times, for learning and abilities, nay even those of the highest rank and station, did homage to those, ' Gods of their " idolatry," and lived in continual dread of their occult powers. With anxious countenances and erected ears, they listened to the effusions of those self-appointed oracles, which prognosticated the bright or gloomy days of futurity. Even physicians were solicitous to qualify themselves for

an appointment no less lucrative than respectable;—they forgot, over the dazzling hoards of mammon, *that they were peculiarly and professedly the pupils of Nature.*—The curious student in the universities found every where public Lecturers, who undertook to instruct him in the profound arts of divination, chiromancy, and the famous *cabala*.

Not to mention other instances, I shall cite that of the noted *Thurneisen*, in last century, who was invested at Berlin with the respective offices of Printer to the Court, Bookseller, Almanack-maker, Astrologer, Chemist, and First Physician. It appears that messengers daily arrived from the most respectable houses in Germany, Poland, Hungary, Denmark, and even from England, for the purpose of consulting him respecting the future fortunes of new-born infants, acquainting him with the hour of their nativity, and requesting his advice and directions, as to the management of them, by the same courier. Many volumes of this singular correspondence are still preserved in the Royal Library at Berlin. The business of this fortunate adept increased so rapidly, that he found it necessary to employ a number of subaltern assistants, who, together with their master, realized considerable fortunes. Thurneisen died in high reputation and favour with his superstitious cotemporaries; and his Astrological Almanack, or the continuation of it, is yet published in some of the less-enlightened provinces of Germany. Here I apprehend the reader will start an objection, and ask,
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how it happens, that an art which determines the fate of mortals, and ascertains the impassible limits of human life, can at the same time serve as the means of prolonging it? This I shall now proceed to account for. The teachers of divination maintained, although on grounds purely hypothetical, that not only men, but all natural bodies, plants, animals, nay whole countries, including every individual place and family, are under the government of some particular constellation. As soon as the masters of the OCCULT SCIENCE had discovered, by their tables, under what constellation the misfortune or distemper of any person originated, nothing further was required, than that such a person should remove to a dwelling ruled by an opposite planet; and that he should confine himself exclusively to such articles of food and drink, as stand under the regency of a different star. In this artificial manner, they contrived to form a system, or peculiar classification of plants, namely, lunary, solary, mercurial, and the like—and hence arose a confused mass of dietetic rules, which, when considered with reference to the purposes of health, cleanliness, exercise, &c. form a remarkable contrast with those of the Greeks.

Neither was this preventive and repelling method confined merely to persons suffering under some bodily disorder. In the case of individuals who enjoyed a good state of health, if an unlucky constellation happened to forebode a severe disease, or any other misfortune, they were directed to choose a place of residence influenced by a more

friendly star;—or to make use of such aliment only as, being under the auspices of a propitious star, might counteract the malignant influence of its adversary.

It was also pretty generally believed and maintained, that a sort of intimate relation or sympathy subsists between metals and plants; hence the names of the latter were given to the former, in order to denote this supposed connection and affinity. Now, the corresponding metals were melted into a common mass, under a certain planet, and were formed into small medals or coins, in hopes, and with the firm persuasion, that he who carried such a piece about his person, might confidently expect the whole favour and protection of the planet thus represented.

The transition from one degree of folly to another is easy; and this may help us to account for the shocking delusions practised in the manufacturing and wearing of metallic amulets of a peculiar cast and construction, to which were attributed, by a sort of magic influence, the power and protection of the planet, to whom they related: these charms were thought to possess virtue sufficient to overrule the bad effects presaged by an unlucky hour of birth, to promote to places of honour and profit, and to be of potent efficacy in matters of commerce and matrimony. The German soldiers, in the dark and superstitious ages, believed, that if the figure of Mars, cast and engraved in the sign of the Scorpion, were worn about the neck as an amulet, it would render them invulnerable,
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and insure success to their military enterprises: hence amulets were found upon every soldier, either killed in battle or taken prisoner.

Let us quit a subject which excites disgust, from the instances it exhibits of such glaring deviations from reason and truth. It is much more pleasant to dwell upon examples, which afford satisfactory proof, that the human mind has never been *entirely and universally* debased, and that there have always existed some individuals, though few in number, who would not submit their necks to the yoke of popular prejudice, and whose superior talents and virtues rescued them from the impositions of too general a folly or depravity. A memorable instance of this rare merit, is the Noble Venetian LEWIS CORNARO, whose history illustrates this agreeable and instructive truth, that nature left to herself, or, in other words, a properly chosen mode of life and diet, regularly persisted in, will achieve great things; and that a frame, disordered and even reduced to a state bordering on the grave, may yet be re-established, and preserve its health and vigour for a great number of years.

Cornaro had been a professed epicure and libertine, till he entered into the fortieth year of his age. His constitution was so far reduced by the colic, rheumatic pains, fevers, &c. that his physicians at length gave him up, assuring him, that he could not survive much longer than two months; that no medicines whatever could avert this cata-

strophe; and that the only resource left as the possible means of his salvation, would be the regular adherence to a frugal diet. He punctually followed this advice, perceived symptoms of convalescence within a few days after entering on his plan of reformation, and after the lapse of twelve months he was not only completely restored, but found himself in a better state of health than he had ever been during his former life. He resolved therefore to confine himself to a still more parsimonious regimen, and to take nothing more than what he judged to be absolutely requisite for the support of life. Thus, during *sixty* years, he stinted himself to exactly twelve ounces of food a-day, (bread and other nourishment included,) together with thirteen ounces of beverage. It should be also observed, that during this long period he carefully avoided violent heat, cold, passions, and extremes of every kind; and by rigidly and uniformly adhering to this moderate diet, not only his body, but his mind also, acquired so determined a tone, that no common incidents could affect them. At a very advanced age, he lost a law-suit, which involved pecuniary concerns of great importance, and on account of which two of his brothers died of broken hearts;—he retained however his pristine health and tranquillity. His carriage happening on some occasion to be overset, he was dragged by the horses, in consequence of which his arms and legs were dislocated. He
caused

caused them, however, to be reduced again, and, without taking any medicines, we find him in a short time restored.

A still more striking instance of the dangerous effects likely to attend any deviation, though in the slightest degree, from long custom and habit, is the following: When Cornaro had reached his eightieth year, his friends prevailed upon him to add a small portion to his daily quantum of food; alleging that his greater age necessarily called for additional support. Although he was not convinced by this argument, being of opinion, that, with the general decrease of strength, our powers of digestion are likewise impaired, and that we ought to diminish rather than to increase our food, in proportion to the decay of nature; yet he yielded to the sollicitations of his friends, and actually increased his food from twelve to fourteen, and his drink from thirteen to sixteen ounces. “Scarcely,” to quote the words of our dietetic veteran, “had I proceeded in this altered mode of living for ten days, before I found my spirits visibly affected; a fretful, peevish temper succeeded to my former cheerfulness and gaiety, so that I became a burden to myself and others. This change of temper was followed by other symptoms still more alarming. On the twelfth day, I was attacked with a pain in my side, which continued for twenty-four hours together, and soon after found myself oppressed by a fever

“ that raged with unabating fury for thirty-five
“ days, so that my life was at times despaired of.
“ By the blessing of God, however, on returning
“ to my former regimen, I recovered from this
“ shock, and now enjoy, in my eighty-third year,
“ perfect health of body and serenity of mind. I
“ can mount my horse without assistance; I can
“ climb steep precipices, and but lately I wrote a
“ comedy abounding with traits of innocent mirth
“ and raillery. When I return home, after being
“ engaged in my private affairs, or from attending
“ the councils of state, I feel inexpressible satisfaction in the company of my grandchildren,
“ eleven in number, whose education, amusement,
“ and songs, are the comfort of my age. I frequently join them in singing, as my voice is now
“ stronger and clearer than I ever knew it to be in
“ my youth, and as my happiness is not disturbed
“ by the complaints, the moroseness, and discontented humours, so frequently the lot of intemperate old age.”

In this happy frame of body and mind, Cornaro attained to his hundredth year; his virtuous and memorable example, however, has hitherto had but few followers. He found by *actual observation* and *experience*, that a strict and uniform regimen, or a regular daily allowance of food and drink ascertained by weight, was the best method he could pursue, for the purpose of prolonging his life. He did not wish however to be understood,

nor

nor does it follow in general, that this or any other precise portion of nutriment is to be held out as a proper standard, by which *all persons* individually are to regulate their diet. His advice, that we should take no more food than what is absolutely necessary to our subsistence, requires a comment, and may be thus explained; namely, that the restoration of strength, derived from supplies of nutriment, ought to bear an exact proportion to the losses sustained by the body. He, for instance, who spends little of his time in bed, and much in the open air, takes frequent exercise, is constantly employed in some laborious occupation, makes long journies on foot or horseback, or the like, will feel himself refreshed and strengthened after partaking of a plentiful meal, and cheering beverage; and such a repast is even indispensable to him, to recruit the sources of his muscular strength and activity.—If, on the other hand, a person who lounges away half of his time in bed, or upon the sofa, were to consume a quantity of food equal to the former, he would no doubt feel himself heavy and uncomfortable. Yet here too, the consequent loss of strength may vary in degree, in different sedentary persons; and this circumstance will afford me an opportunity, in the sequel, to apply to individual cases the doctrine suggested by the experience of Cornaro.

There was another period, during which *blood-letting* came into general use, and obtained great

credit, as one of the most effectual means of prolonging life: the superfluity and vitiated state of the blood, or what physicians term a *plethoric habit*, being looked upon, at the same time, as a principal means of shortening life. Through the veins thus regularly opened, at certain seasons, the superfluous or vitiated blood was supposed to be emitted, while that of more salubrious quality was left behind. Considered as a medical remedy, phlebotomy must certainly be allowed to possess its uses, and it is sometimes a necessary expedient, to produce an immediate diminution in the fulness of the blood, particularly when the time is too short, and the danger too pressing, to admit of any other method for effecting this purpose. As there can be no doubt, that blood-letting is an invaluable remedy in many disorders, it is the more peculiarly incumbent on the practical physician, to distinguish with care those cases, in which imminent danger may be averted, and health restored by the use of it. I am of opinion, that there are two cases, and only two, in which venesection is likely to be attended with real advantage; 1st, When it is required to prevent the fluids from gaining access to the parts more essential to life; and, 2dly, Where means must be speedily devised, to counteract a threatened inflammation in the intestines. But, even in these two cases, the intelligent physician is at no loss for other remedies, which may be frequently administered with a greater probability of success than

than even venesection. In the treatment of every disorder, it is necessary to single out that remedy, which is found most suitable to the stage of the complaint. And here we have no occasion to start the question, Whether the method and the means, by which the disease is checked and health restored, are, in the end, best calculated to prolong the life of the patient? Physicians professionally look upon every disease as an evil, which cannot be too speedily removed; and it would be to hazard the recovery of their patients, in many cases, were they to waste time in reflecting upon the consequences, which may or may not influence the duration of life. Hence the art of prolonging life, strictly speaking, is not to be treated as a distinct branch of medicine, but rather forms a separate art, and as such is the common property of all: it should therefore constitute a part of the studies and inquiries of every rational individual, whatever be his other engagements and occupations.—The absurd notion, that blood-letting is useful and necessary to the prolongation of human life, is yet pretty generally received among the common people of all countries. Neither the *good* nor the *bad* days, superstitiously marked in the almanacks for amusing the vulgar, can palliate or justify the mischiefs, with which this dangerous error is pregnant. Bleeding can be of service only, when it is performed in proper time; and it may prove detrimental, in no small degree, if the proper opportunity be missed,

or neglected. To express my opinion of it, in a few words, *it is always noxious to the health.*

The blood contains and affords to the bones, ligaments, tendons, membranes, muscles, nerves, vessels, in short, to the whole organized body, all the parts, which form the bones, ligaments, tendons, &c. Each of these parts is evolved from the blood, and adapted to its proper place, in so artificial a manner, that the human mind is totally at a loss to comprehend, how this operation is performed; neither have the researches of the most acute and attentive observers been able to account for it. And as the blood serves to replenish the diminution, and to make up the losses, which those parts occasionally sustain, it may for this reason be considered as the original source of our whole organization. The most essential constituent parts of the human frame are formed from the blood;—by its stimulating powers it also causes the heart and the arteries to contract; and in this manner preserves its circulating motion, by which it is propelled through all the parts of the body, for the purposes designed by nature.

Now, it requires little reflection to perceive, that he who squanders this vital fluid, thereby obstructs, and, as it were, cuts off the sources of his support and regeneration. And though it be true, that the blood evacuated by periodical bleedings is soon reproduced by the activity of the vital powers, yet this restoration is only brought about with considerable

siderable efforts, and at the expence of the whole machine. As this exertion, therefore, is a great pressure upon the vital powers, it must of course be attended with a proportionate degree of their consumption. It is farther well known, that the corrupted part of the blood cannot be separated from the mass, so that the sound and uncorrupted particles alone may remain behind. If the quality of the blood ever become vitiated and diseased; if it be too thick and viscous, or too acrid, too thin and dissolved, the whole mass participates in the infectious taint; neither is it in the power of art, to contrive any method, by which the corrupted part may be kept asunder, from that which is in a sound state.—It would be equally unreasonable to expect, that a spoiled cask of wine could be cured of its tartness, by drawing or tapping the acid and corrupted portion from the top, and leaving behind the sweet and wholesome part of this valuable liquor. Lastly, experience has shewn in numberless instances collected from different observations, that persons accustomed to frequent blood-letting are not only rendered more delicate in their constitutions, and thereby more subject to diseases, but also that they die, for the most part, at an earlier age than others. Although cases have occurred of some persons who, having been bled twice or four times a-year, have notwithstanding attained to a considerable age, this can only prove, that blood-letting was to them a proper medical remedy, perhaps

haps adapted to their peculiar habit of body ; or that the activity of their vital powers, their mode of life, with other favourable circumstances, internal and external, may have been sufficient to counterbalance the dangerous consequences, resulting from the frequent loss of this essential fluid.

At a time, when the shortness of life was imputed to a distempered state of the blood ; when all diseases were ascribed to this cause, without attending to the *whole* of what relates to the moral and physical nature of man, a conclusion was easily formed, that a radical removal of the corrupted blood, and a complete renovation of the entire mass, by substitution, was both practicable and effectual. The speculative mind of man was not at a loss to devise expedients, or rather attempts, for effecting this desirable purpose ; and this undoubtedly was one of the boldest, most extraordinary, and most ingenious attempts ever made to lengthen the period of human life. I allude here to the famous scheme of *transfusion*, or of *introducing the blood of one animal body into that of another* ; a curious discovery, attributed to ANDREAS LIBAVIUS, Professor of Medicine and Chemistry in the University of Halle, who, in the year 1615, publicly recommended experimental essays to ascertain the fact. Libavius was an honest and spirited advocate against the Theosophic system, founded
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by the bombastic Paracelsus, and supported by a numerous tribe of credulous and frantic followers. Although Libavius was not totally exempt from the fashionable follies of that age, since he believed in the transmutation of metals, and suggested to his pupils the wonderful powers of *potable gold*; yet he distinguished rational Alchemy from the fanatical systems then in vogue, and zealously defended the former against the disciples of Galen, as well as those of Paracelsus. He made a number of important discoveries in Chemistry, and was unquestionably the first professor in Germany, who read Chemical Lectures, upon pure principles of affinity, unconnected with the extravagant notions of the Theosophists. As this remarkable sect was founded upon the doctrines of Paracelsus, during the latter part of the sixteenth and the beginning of the seventeenth centuries; and as the society known by the name of Rosacruzians, or Rosencrucians, has not been without its followers and propagators, in different shapes, even to the present time, I shall here present the reader with a concise account of the origin and tenets of that fanatical sect.

We find this order first publicly announced to the world, in a book published in the German language, at Regensburg, in the year 1614, with the following title: “*The Universal and General Reformation of the World, together with an Account of the famous Fraternity of the Rosencrucians.*” In the work, however, we find an intimation,

timation, that the members of the society had been secretly at work, for a century preceding, and that they had come to the knowledge of many great and important secrets, which, if communicated to the world, would promote the happiness of man. An Adventurer of the name of CHRISTIAN ROSEN-KREUZ is said to have founded this order, in the fourteenth century, after being previously initiated into the sublime wisdom of the East, during his travels in Egypt and Fez. According to what we can learn from this work, the intention of the founder, and the final aim of the society, appear to have been to accumulate wealth and riches, by means of secrets known only to the members; and by a proper distribution of these treasures among Princes and Potentates, to promote the grand scheme of the society, by producing "*a general revolution of all things.*" In their "Confession of Faith" are many bold and singular dogmas; among others, that the end of the world is at hand; that a general reformation of men and manners will speedily take place; that the wicked shall be expelled or subdued, the Jews converted, and the doctrine of Christ propagated over the whole earth. These great improvements are not only believed in, by the Rosencrucians, as events that must happen; but they even profess and propose to accelerate the same by their exertions. To their faithful votaries and followers they promise abundance of celestial wisdom, unspeakable riches, exemption

exemption from disease, an immortal state of ever-blooming youth, and, above all, *the Philosopher's Stone*. Learning and culture of the mind are, by this order, considered as superfluous, and despised. They find all knowledge contained in the Bible ; this, however, has been supposed rather a pretext to obviate a charge, which has been brought against them, of not believing in the Christian Religion. The truth is, they consider themselves as superior to Divine Revelation, and believe every useful acquisition, every virtue to be derived from the influence of the Deity on the soul of man. In this, as well as many other respects, they appear to be followers of Paracelsus, whom they profess to revere as a messenger of the Divinity. Like him, they pretend to cure all diseases, through *Faith* and the power of imagination ;—to heal the most mortal disorders by a touch, or even by simply looking at the patient. The Universal Remedy was likewise the grand secret of the order, the discovery of which was promised to all its faithful members *.

* To exhibit a more compendious view of the *Paracelsian Theosophy*, as well as of that of the *Rosicrucians*, I shall here subjoin a sketch of their very singular tenets ; after premising, that this system, however justly it may be ridiculed as a compound of all possible whims and absurdities, has undoubtedly, for a considerable length of time, had a very great, but noxious influence on every branch of medicine. And if the extensive application of that system, to every species of superstition, had been carried into execution, or if the romantic notions of these fanatical philosophers could have been more easily adopted by the middle ranks of society, a new night of barbarism, no less
fatal

I should almost scruple to enumerate any more of such impious fancies, if the Founder of this still lurking

fatal to medicine and genuine philosophy than Gothic superstition, would again have overspread the different countries of Europe.

“Every thing,” said they, “in nature possesses life; no substance is without it.—Every thing that lives, contains within it an *astrum*, a vital power, which is totally inactive without a body, but which in putrefaction and dissolution migrates from one body to another.—The composition of man resembles the structure of the heavens; whatever we observe in the great world, has likewise its counterpart in the small; and as many species of minerals as are to be found in the *Macrocosm*, or visible system of the world, so many symmetrical excellencies are there in the *Microcosm*, as the son of the former. All the knowledge which man obtains, is derived from the firmament; he is rendered a true sage only by the diversified *astralian* influence; his spirit emanated from the *Astra*, or vital powers, but his soul from the mouth of the Deity. The firmament is the light of Nature, but God is the light of Grace, from which the true philosopher derives his being. The numerical scale of the Cabalists is analogous to the intellectual world, and even to the *archetype*: all parts of the body correspond with certain elements, planets, powers, numbers. The internal, vital power of man, his genius, his imagination, is called *Gabalis*, whence the gabalistical or cabalistical art has received its name. This is at once the magnet, and the magnetic power of man. Every thing in the visible world may be reproduced by means of the Cabala; this is the representing faculty which, like a magnet, attracts all visible bodies, and exhibits them to the senses. The internal cabalistic prayer addressed to the Deity, or the secret conversation we hold with him, unites the mind to the original source of truth and knowledge. And now it is in the power of man to perform wonders, miracles, with his *thinking faculty*. He is not active in this business, but passive; he learns

lurking sect, now partly revived, had not asserted with astonishing effrontery, that human life was capable of prolongation, like a fire kept up by combustible matter, and that he was in the possession of a secret, which could verify this promise. It is evident, however, from the testimony of the above mentioned Libavius, a man of unquestionable veracity, that this doughty champion in Medical Chemistry, or rather Alchemy, Paracelsus, notwithstanding his vaunting assurances, died at Salzburg in Germany, in the Hospital of St. Stephen's, in 1541; and that his death was principally brought on by the irregular and dissolute mode of life, which he had for a long time pursued.

The first experiments relative to the transfusion of the blood, appear to have been made, and that with great propriety, on the lower animals. The blood of the young, healthy, and vigorous was transfused into the old and infirm, by means of a delicate tube, which was placed in a vein opened for that purpose. The effect of this operation was surprising and important: the aged and decrepit animals were soon observed to grow more lively, and to move with greater ease and rapidity. By

learns nothing; for he is influenced and taught by *Grace*; and by this mysterious instrument he acquires the knowledge of every thing really useful and necessary towards his perfection."

Who does not recognize in this medley of absurdities, some of the leading features of certain sectarians in this country, even of a later date?

the indefatigable exertions of LOWER, in England, DENIS, in France, and MORITZ HOFFMANN, and others in Germany, this artificial mode of renovating the life and spirits was successfully followed up, and even brought to some degree of perfection.—The vein usually opened in the arm of a patient was resorted to for the purpose of transfusion; into this a small tube was placed in a perpendicular direction; the same vein was then opened in a healthy individual, but more frequently in an animal; another tube was also forced into it, in a reclining direction; both the small tubes were then slid into one another; and in that position the delicate act of transfusion was safely performed. When the operation was completed, the vein was tied up in the manner as is usually done in blood-letting.—Sometimes a quantity of blood was discharged from the patient, previously to the experiment taking place. As few persons however were to be found, that would agree to part with their blood to others, recourse was generally had to animals, and most frequently to the calf, the lamb, and the stag. These being laid upon a table, and tied so as to be unable to move, the operation was performed in the manner before described.

In some instances, the good effects of these experiments were evident and promising, while they excited the greatest hopes of the future improvement and progress of this new art. But the
increasing

Increasing abuses, to which it led bold and unexpert practitioners, together with the great number of cases, wherein it proved unsuccessful, induced the different governments of Europe, to put an entire stop to that practice, by the strictest prohibitions. And, indeed, so long as the constitutions of men differ from each other so greatly as they do, this is, and ever will be, a hazardous, if not a desperate remedy.—The blood of every individual is *sui generis*, or of a peculiar nature, and suits or accords, as it were, with that body *only*, to which it belongs, and in which it is generated. Hence our hopes of prolonging human life, by artificial evacuations and injections, must necessarily be disappointed.

We are not however to suppose, that these and similar pursuits, during the times of which we treat as well as the following, were solely or chiefly followed by mere adventurers and fanatics. No! the greatest wits and geniuses of those times, together with the most learned and eminent men, deemed these objects to be worthy of their sedulous attention. LORD BACON, that sagacious explorer of the arcana of Nature, that luminary of science and talents, represents life as a flame, which is continually wasted by the surrounding atmosphere, and delivers it as his belief, that *all the fluids* of the body may from time to time be renovated, and require so to be. The remedies, which he chuses and prescribes, are conformable to this hypothesis.

To prevent the *external* consumption from taking place, which is produced by the circumambient air, he recommends the bath and, after quitting it, friction with oils and salves, with a view to fortify the pores, and exclude the influence of the external air. As means to counteract the *internal* waste of the body, he inculcates the propriety of a cooling, moderate diet, and, above all, extols the narcotic or soporific remedies, as the true balm of life, and the best adapted to attain the desired effect.—Tranquillity of mind, and a cooling diet, may no doubt be very necessary in some cases, where there is too great an irritability of temperament, and where the circulation of the blood is too rapid. But to an indolent body, or what is called a phlegmatic habit, they will rather be injurious than serviceable. Narcotic remedies, too, are but ill qualified to cool and to moderate the body, since they never fail to act as a certain stimulus, are attended with heat and relaxation, and therefore must accelerate the consumption of the vital powers: a sleep, also, which is artificial, and which they have a tendency to procure, cannot upon the whole be salutary. Besides, the man of active temperament would think he had lived one hundred years to little purpose, if, instead of exerting his physical and moral qualities, suitably to his nature and destination, he had spent two thirds of that time in indolence and sleep. Again, it is no less evident, that the vital power supplied by heat

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or *caloric* (which is principally evolved from the air *, and introduced into the body by means of respiration) must be much less considerable in a dormant state, than while we are awake.

For improving the fluids of the aged, and renovating the dry and corrupted part of them, Lord Bacon thinks, nothing can be put in competition with powerful laxatives, and advises to repeat a full course of them, every two or three years at least. These remedies are, in his opinion, the best qualified to evacuate vitiated humours, and afterwards to produce, in lieu of them, milder and more healthy juices. The exhausted and, as it were, thirsty vessels may be replenished and strengthened, according to his ideas, by a refreshing and nourishing diet.

However plausible this theory may appear, the execution of it is impracticable, and the basis on which it rests, is merely conjectural. If it were possible to withdraw the corrupted part of the fluids from the body, by means of evacuants, and at the same time to remove the *causes*, which produce this tendency to corruption, then the doctrine laid down by Lord Bacon would deserve every praise, and the most minute attention to its merits. But

* We shall have occasion to institute a particular inquiry into the properties of *air*, in the next Chapter, from which it will appear, that one species of air is more noxious to the vital power than another, and that there is a greater consumption of it in one, than in the other.

it ought to be observed, that the activity and energy of *the whole* organized system is indispensably necessary in the process of separating the noxious or useless particles. As, further, the more watery fluids only are removed by laxatives; as the latter have a bad effect on the stomach and intestines, by rendering them too irritable, and consequently less tonic or vigorous; as the bile, a fluid so essential to the concoction of food and assimilation of alimentary matter, is thereby uselessly wasted; as the balance between the solid and fluid parts of the body is in this manner destroyed; and as, upon the whole, the vital powers must sustain a degree of diminution in affording supplies to repair what is lost;—from these considerations, the precarious nature of *evacuants*, as a mean of prolonging human life, appears too evident to require further illustrations.

It is not, therefore, in such remedies as these, which can only be employed with safety, where a judicious attention is paid to the case and circumstances of the patient, that we ought to confide as the most proper to prolong the period of our existence: we must look out for means less dangerous and more effectual.

There is a pretty numerous class of men, who profess to calculate the length of their lives, not so much by the number of years or days they have lived, as by the use they have made of them, or, to speak more plainly, by the quantum of sensual
pleasure

pleasure they have enjoyed. Persons of this cast are not averse to what is called *fast living*; and, though fully sensible of the unavoidable consequences, they wish at the same time to live well. As they are accustomed to reckon only upon the enjoyments of life, they wish to attain them in a shorter period of time, and in more rapid succession, rather than slowly and by degrees; especially as the duration of our life ever remains uncertain. Men of this sanguine character may be aptly compared to a plant forced in a hot-house. This indeed will grow up suddenly, but, if contrasted with a plant of slower growth, with any kind of fruit which gradually ripens to maturity, it will be much degenerated, neither possessing the solidity and strength of stalk, nor the astringent, aromatic, and other properties, in that vigour and perfection, as we find them in vegetables raised in the open air. Many similar hot-house plants are discoverable among men, in the different stages of society. In childhood, they display the premature acquirements of youth; at their juvenile age, they show the sense, ambition, and other qualifications of men; and before they have well passed through the prime of manhood, they are either snatched away by untimely death, or their faculties become totally blunted and impaired.

It is the unalterable plan of Nature, to proceed, in every step of her operations, by degrees; all outrage and extravagance militate against her esta-

blished laws.—The *true* enjoyment of life does not consist in the hasty pursuit of pleasure, nor in the intemperate indulgence of the sensual appetite. The epicure is soon laid up by dangerous surfeit in a variety of highly-flavoured dishes, and is obliged to spend that time in reluctant confinement, which he proposed to devote to his bottle, to his debauch, or to some scene of gaiety; he is compelled to lead as it were a vegetable life, scarcely regretted by his friends, and, in the most proper sense of the word, to *exist* rather than to *live*.

In one respect, we have little occasion to extol our own enlightened age, at the expence of those which are so frequently and justly termed *dark*: I allude here to the bold and artful designs of imposture, and particularly *medical imposture*. We daily see illiterate and audacious empirics sport with the lives of a credulous public, that seem obstinately resolved to shut their ears against all the suggestions of reason and experience. It is a melancholy truth, that little more is required at present, to impose upon the multitude, than some appearance of learning, a confident address, and affected humanity; especially as there are no laws to check and prevent such impositions.

The host of empirics and mountebanks, to be found in our great cities, and the tinctures, essences, and balms of life so much in vogue with even the polished classes; the celestial beds, the enchanting magnetic powers, lately introduced into this country

try by *Messmer*, the German, and his numerous disciples; the prevailing indifference to all dietetic precepts; the tables for blood-letting, and other absurdities of popular almanacks, sufficiently evince, that this is far from being the "Age of Reason;" that the Temple of Superstition is yet thronged with numberless votaries; that human reason is still a slave to the most tyrannical prejudices; and that there is no readier way to excite general attention and admiration, than to affect the mysterious and the marvellous.

The fanatical system of JACOB BÖHME has been lately revived in some parts of Germany. The ghosts and apparitions, which had disappeared since the times of THOMASius and SWEDENBORG, have again, it seems, left their graves, to the great terror of their seers! New and unheard-of prophets announce their Divine mission, and, what is worse, find implicit believers! The inventors of secret medicines are rewarded by patents, and obtain no small celebrity; while some of the more conscientious but less fortunate adepts endeavour to amuse the public with *popular systems of medicine*! These, however, are harmless, in comparison with the daring experiments, of which I shall briefly sketch the history.

One of the most dazzling and successful Inventors in modern times was MESSMER, who began his career of Medical Knight-errantry at Vienna. His house was the mirror of high life; the rendezvous
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of the gay, the young, the opulent; being enlivened and entertained with continual concerts, routs, illuminations. At a great expence he imported into Germany the first *Harmonica* from this country; he established cabinets of natural curiosities, and laboured constantly and secretly in his chemical laboratory; so that he acquired the reputation of being a great Alchemist, a philosopher studiously employed in the most useful and important researches.

In 1766 he first publicly announced the object and nature of his secret labours:—all his discoveries centered in the *magnet*—which, according to his hypothesis, was the greatest and safest remedy hitherto proposed against all diseases incident to the human body. This declaration of Mesmer excited very general attention; the more so, as about the same time he erected an hospital in his own house, into which he admitted a number of patients *gratis*. Such an instance of disinterestedness procured him, as might be expected, no small addition to his fame. He was, besides, fortunate in gaining over many celebrated physicians to espouse his opinions, who lavished the greatest encomiums on his new art, and were instrumental in communicating to the public a number of successful experiments. This seems to have surpassed the expectations of Mesmer; in consequence of which his plan was extended farther than it is likely he first intended. We find him soon afterwards assuming
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a more dogmatical and mysterious air, when, for the purpose of shining exclusively, he appeared in the character of a *Magician*—his pride and egotism would brook neither equal nor competitor.

The common Loadstone, or Mineral Magnet, which is so well known, did not appear to him sufficiently important and mysterious: he contrived an unusual and unknown one, to the effect of which he gave the name of '*Animal Magnetism*.' After this he proceeded to a still bolder assumption, every where giving it out, that the inconceivable powers of this subtle fluid were centered in his own person. Now the Mono-drama began; and Mesmer, at once the hero and chorus of the piece, performed his part in a masterly manner. He placed the most nervous, hysterical, and hypochondriac patient exactly opposite to him; and by the sole act of stretching forth his finger, made them feel the most violent shocks. The effects of this wonderful power excited universal astonishment; its activity and penetrability being confirmed by unquestionable testimonies, when it appeared, that blows resembling those given by a blunt iron, could be imparted by the operator, while he himself was separated by two doors, nay even by thick walls. The very looks of this Prince of Jugglers had the power to excite painful cramps and twitches.

His wonderful tide of success easily drew-on this indefatigable genius to bolder attempts, especially as he had no severe criticisms to apprehend from

the superstitious multitude. He roundly asserted things, of which he never offered the least shadow of proof; and for the truth of which he had no other pledge to offer, but his own high reputation. At one time he could communicate his magnetic power to paper, wool, silk, bread, leather, stones, water, &c.—at another he pronounced, that certain individuals possessed a greater degree of susceptibility for this power than others.

It must be owned, however, to the honour of his cotemporaries, that many of them made it their business to encounter his extravagant pretensions, and to refute his dogmatical assertions with the most convincing arguments. Yet he long enjoyed the triumph of being supported by blind followers; their too great number completely overpowered the suffrages of reason.

Messmer perceived at length, that he should never be able to reach, in his native country, the point which he had fixed upon, as the term of his magnetical career. The Germans began to discredit his pompous claims; but it was only after repeated failures in some important promised cures, that he found himself under the necessity of seeking protection in Paris. Here he met with a most flattering reception, being caressed, and in a manner adored, by a nation which has ever been extravagantly fond of every thing, that is new, whimsical, and mysterious. Messmer well knew, how to turn this national propensity to his own advantage.

tage. He addressed himself particularly to the weak; to such as wished to be considered men of profound knowledge, but who, when they are compelled to be silent from real ignorance, take refuge under the impenetrable shield of mystery. The fashionable levity, the irresistible curiosity, and the peculiar turn of the Parisians, ever solicitous to have something interesting for conversation, to keep their active imagination in play, were exactly suited to the genius and talents of the inventor of Animal Magnetism. We need not wonder, therefore, if he availed himself of their moral and physical character, to ensure easy entrance to his doctrines, and success to his pretended experiments: in fact, he found friends and admirers, wherever he made his appearance *.

What

* His first advertisement was couched in the following high-sounding terms: "Behold a discovery which promises unspeakable advantages to the human race, and immortal fame to its author! Behold the dawn of an universal revolution! A new race of men shall arise, shall overspread the earth, to embellish it by their virtues, and render it fertile by their industry. Neither vice, nor ignorance, shall stop their active career; they will know our calamities only from the records of history. The prolonged duration of their life will enable them to plan and accomplish the most laudable undertakings. The tranquil, the innocent gratifications of that primeval age will be restored, wherein man laboured without toil, lived without sorrow, and expired without a groan! Mothers will no longer be subject to pain and danger during their pregnancy and childbirth; their progeny will be more robust and brave; education's now rugged and difficult path
" will

What splendid promises! what rich prospects! Mesmer, the greatest of philosophers, the most virtuous of men, the physician and saviour of mankind, charitably opens his arms to all his fellow-mortals, who stand in need of comfort and assistance. No wonder, if the cause of Magnetism under such a zealous apostle became every day more important, and gained every day large additions to the number of its converts. To the gay, the nervous, and the dissipated of all ranks and ages, it held out the most flattering promises. Men of the first respectability in the kingdom interested themselves in behalf of this new philosophy; they anticipated, in idea, the more happy and more vigorous race to proceed, as it were by enchantment, from the wonderful impulsive powers of

“ will be rendered smooth and easy; and hereditary complaints
 “ and diseases will be for ever banished from the future auspicious race. Parents will impart to them the activity, energy,
 “ and graceful limbs and demeanour of the primitive world.
 “ Fathers rejoicing to see their posterity of the fourth and fifth
 “ generations, will only drop, like fruit fully ripe, at the extreme point of age! Animals and plants, no less susceptible
 “ than man of the magnetic power, will be exempt from the reproach of barrenness and the ravages of distemper. The
 “ flocks in the fields, and the plants in the gardens, will be
 “ more vigorous and nourishing, and the trees will bear more
 “ beautiful and luscious fruits. The human mind, once gifted
 “ with the enjoyment of this elementary power, will perhaps
 “ rise to still more sublime and astonishing effects of nature:—
 “ who indeed is able to pronounce, with certainty, how far
 “ this salutary influence may extend?”

Animal

Animal Magnetism. A fact still more remarkable is, that the French Government was so far seduced by these flattering appearances, as to offer the German Adventurer *thirty thousand livres* for the communication of his secret art. He appears, however, to have understood his own interest better than thus to dispose of his hypothetical property, which upon a more accurate investigation might be excepted against, as consisting of unfair articles of purchase. He consequently returned the following answer to the credulous French Ministers:—"That Dr. M. considered his art of too great importance, and the abuses it might lead to, too dangerous for him as yet to make it public; that he must therefore reserve to himself the time of its publication, and mode of introducing it to general use and observation; that he would first take proper measures to initiate or prepare the minds of men, by exciting in them a susceptibility of this great power; and that he would then undertake to communicate his secret gradually, which he meant to do without hope of reward."

Messmer, too politic to part with his secret for so small a premium, had a better prospect in view; and his apparent disinterestedness and hesitation served only to sound an over-curious public; to allure more victims to his delusive practices; and to retain them more firmly in their implicit belief. Soon after this, we find Messmer easily prevailed upon to institute a private society, into which none
were

were admitted but such, as bound themselves by a vow to perpetual secrecy. These pupils he agreed to instruct in his important mysteries, on condition of each paying him a fee of *one hundred louis*. In the course of six months, having had not fewer than three hundred such pupils, he thereby at once realized a fortune of *thirty thousand louis*. It appears, however, that his disciples did not long adhere to their engagement: we find them separating gradually from their great master, and establishing schools for the propagation of his system, with a view, no doubt, to reimburse themselves for their expences in the acquisition of the magnetising art. But few of them having clearly understood the enigmatic terms and mysterious doctrines of their foreign master, every new adept exerted himself to excel his fellow-labourers, in additional explanations and inventions: others, who did not possess, or could not spare the sum of one hundred louis, were industriously employed in attempts to discover the secret by their own ingenuity; and thus arose a great variety of magnetical sects, discordancies, and absurdities. At length, however, Mesmer's authority became suspected; his pecuniary acquisitions were now notorious, and our *humane and disinterested philosopher* was assailed with critical and satirical animadversions from every quarter. The futility of his process for medical purposes, as well as the bad consequences it might produce in a moral point of view, soon became topics of common

mon conversation, and at length excited even the apprehensions of Government. One dangerous effect of the magnetic associations was, that young voluptuaries began to employ this art, to promote their libidinous and destructive designs.

As soon as matters had taken this serious turn, the French Government, much to its credit, deputed four respectable and unprejudiced men, to whom were afterwards added four others of great learning and abilities, to inquire into, and appreciate the merits of the new discovery of animal magnetism. These philosophers, among whom we find the illustrious names of Franklin and Lavoisier, recognized indeed very surprising and unexpected phenomena in the physical state of magnetised individuals; but they gave it as their opinion, that the power of imagination, and not animal magnetism, had produced these effects. Sensible of the superior influence, which the imagination can exert on the human body, when it is effectually wrought upon, they perceived, after a number of experiments and facts frequently repeated, that *Contáct* or Touch, *Imagination*, *Imitation*, and *excited Sensibility*, were the real and *sole* causes of those phenomena, which had so much confounded the illiterate, the credulous, and the enthusiastic; that this boasted magnetic element had no real existence in nature; consequently that Mesmer himself was either an arrant Impostor, or a deceived Fanatic.

In the mean time, this magnetising business had made no small progress in Germany; a number of
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periodical and other publications vindicated its claims to public favour and attention; and some literary men, who had rendered themselves justly celebrated by their former writings, now appeared as bold and eager champions in support of this mystical medley. The ingenious LAVATER undertook long journies for the propagation of Magnetism and Somnambulism—and what manipulations and other absurdities were not practised on hysterical young ladies in the city of Bremen? It is further worthy of notice, that a reputed physician of that place, in a recent publication, does not scruple to rank magnetism among medical remedies! Yet it must be confessed, that the great body of the learned, throughout Germany, have made it their business, by strong and impartial criticism, to oppose and refute Animal Magnetism, considered as a medical system. And how should it be otherwise, since it is highly ridiculous to imagine, that violent agitations, spasms, convulsions, &c. which are obviously symptoms of a diseased state, and which must increase rather than diminish the disposition for nervous diseases, can be means of improving the constitution, and ultimately prolonging human life? Every attentive person must have observed, that too frequent an intercourse among nervous and hypochondriac patients is infectious; and, if so, that public assemblies for exhibiting persons magnetised can neither be safe nor proper. It is no small proof of the good sense of the people of this country, that the professors of this fanatical art could not
long

long maintain their ground ; that they were soon exposed to public ridicule on the stage ; and the few who are still left, to the disgrace of the credulous or the obstinate, are now banished to dark alleys and obscure cellars of the metropolis.

Some other plans for the prolongation of life deserve to be mentioned, though scarcely less absurd than the preceding.

The French Count of ST. GERMAIN made large sums, by vending an artificial Tea, chiefly composed of Yellow-Saunders, Senna-leaves, and Fennel-seed ; puffing it off by the specious name of *Tea for prolonging life*. It was once swallowed with great avidity all over the continent ; but its celebrity was short-lived, and its promised beneficial effects were never realized.

Another impudent Adventurer, the *Chevalier* D'AILHOU, presented the world with a Powder, which met with so large and rapid sale, that he was very soon enabled to purchase a whole *Comté*. Instead, however, of adding to the means for securing health and long life, this famous powder is now known to produce constant indisposition, and at length to cause a most miserable death ; being compounded of certain drugs, which are clearly of a poisonous nature, although of slow operation. And yet there are on the continent, even to this day, several respectable families who persist in the use of this deleterious powder, from an ill-judged partiality for its noble inventor.

COUNT CAGLIOSTRO, that luminary of modern Impostors and Debauchees, prepared a very common stomachic Elixir, which he sold at an enormous price by the name of "*Balm of Life*;" pretending with unparalleled assurance, that by the use of this medicine he had attained an age exceeding 200 years, and that he was thereby rendered invulnerable to all attempts by poison. These bold assertions could not fail to excite a very general attention. During his residence at Strasburg, while he was descanting, in a large and respectable company, on the virtues of his antidote, his pride was mortified by a severe check. A Physician who was present, and had taken part in the debate, quitting the room privately, went to an Apothecary's shop, where having ordered two pills to be made of an equal size, and agreeably to his directions, he suddenly appeared again before Cagliostro, and addressed him as follows: "Here, my
" worthy Count, are two pills; the one contains a
" mortal poison; the other is perfectly innocent;
" choose one of them, and swallow it, and I en-
" gage to take that which you leave. This deci-
" sion may then be considered as a proof of your
" medical skill, and will enable the public to as-
" certain the efficacy of your extolled Elixir." Cagliostro took the alarm; made a number of apologies, but could not be prevailed upon to touch the pills. His opponent then swallowed both of them, and proved by his Apothecary, that they might be taken with the most perfect safety, being only

only made of common bread. Notwithstanding the shame of this detection, Cagliostro still retained numerous advocates and partisans; circulating many eccentric notions, and concealing his real character by a variety of tricks.

The inspired FATHER GASSNER of Bavaria ascribed all diseases, lameness, palsy, &c. to diabolical agency, contending from the history of Job, Saul, &c. recorded in sacred writ, that Satan, as the grand enemy of mankind, has a power to embitter and shorten our lives by diseases. Vast numbers of credulous people flocked to this fanatic, for the purpose of obtaining relief. Whole cargoes of patients, afflicted with nervous and hypochondriac complaints, besieged him as it were in his quarters every day;—all stimulated and heated with a wild imagination, all eager to view and to acknowledge the works of Satan! Men of literary character, even the Natural Philosophers of Bavaria, were carried along with the stream, and completely blinded by this sanctimonious Impostor.

It is no less astonishing than true, that a certain COUNT THUN made his public appearance in Leipzig, only about three years ago, where he pretended to perform miraculous cures on gouty, hypochondriac, and hysteric patients, merely by the imposition of his sacred hands. He could not, however, raise any disciples in a place, that abounds with Sceptics and Unbelievers.

It would be trespassing too much on the limits I have proposed to myself, were I to enumerate the various remedies advertised in the daily papers, both British and foreign, under the fictitious and fraudulent pretence of prolonging life. I shall therefore only remark in general, that all these celebrated specifics are obviously composed upon wrong principles; inasmuch as their inventors proceed on the hypothetical idea, that *disease is the only cause of shortening life*; and no wonder, if being thus mistaken, they carry the *strengthening* or *bracing* system to an extravagant degree.

The highest point of bodily vigour and health may of itself contribute to shorten life; although no external causes may appear as co-operating to hasten the consumptive process. Nay, the very remedies we use, and the regimen we attend to, for the prevention or cure of diseases, may be of such a nature, upon the whole, as to promote the same consumption.

From the doctrines now laid before the reader, I hope I shall not be thought unreasonable, in drawing this conclusion:—That the plans for prolonging human life are generally erroneous and injudicious; that all *artificial* means have rather a tendency to shorten than to prolong it; and that we can never safely expect the accomplishment of this great object, unless we pursue methods
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more consonant to nature, more verified by experience.

The truth of this inference will be more evident, when we come to inquire into the *conditions*, which are essentially requisite to the attainment of a long life.

The *first* of these, is a certain bodily and mental disposition to longevity, not easily defined, yet sufficiently known and understood. In whatever this disposition may consist, it is matter of astonishment, and inexplicable by the laws of animal œconomy, that many individuals, frequently under the most unfavourable circumstances, and in the most unwholesome climates, have attained to a great and happy age. This much may be confidently affirmed, that, without this principal requisite, all other advantages are often of no avail;—the most salubrious country-air, a district abounding with aged inhabitants, a rigid adherence to the diet of Cornaro, a regular course of exercise and recreations, with the best art of the physician, cannot insure the felicitous prospect of a long and healthy life*.

Secondly :

* If these rational means be unavailing to insure longevity, still more so are those miraculous remedies introduced by superstition. The Ancients conceived the idea of a *principle of life*, which they compared to a radical fluid;—the Alchemists expected to find this *original entity* in *gold*, by the use of which they pretended that the human body might acquire the solidity and durability of that metal. Others traced the germ of life in bodies of considerable duration; in plants and animals; in

Secondly: I cannot help thinking that there is, in most cases, a sort of hereditary disposition to longevity; an innate principle, or quality, which, like many family diseases, is propagated from one generation to another. Perhaps nine out of ten old people could make it appear, that their parents and ancestors also lived to a great age; a reason which may be admitted without having recourse to any material substance, as the cause or effect of this inherent virtue.—On the contrary, we find a similar hereditary disposition prevailing in some maladies, the cause of which has hitherto been inexplicable: such, for example, is the disease called Apoplexy, which is so rooted in certain families, that sometimes a long line of descendants are and remain subject to it, however dispersed in different parts of the world, and under circumstances of the greatest diversity of living.

The *third* pre-requisite to longevity is, what I shall call, a *perfect birth* of the child, and a proper subsequent conduct in the mother;—upon which subject it is not my intention to expatiate in this place. That acute physiologist, LORD BACON, somewhere remarks, “that children partake more of

the wood of the Cedar, and in the flesh of the Stag.—BOERHAAVE has a facetious remark upon the subject: “This notion,” says he, “is just as ridiculous, as that of the man, who, in order to prepare himself for the business of a running foot-man, is said to have lived for some time entirely on the flesh of hares; hoping thus to surpass in agility all his fellows.”

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“ the nature of the mother, the longer a time she
“ has nursed them ; and that those children which
“ most resemble the mother, will be generally found
“ to have a claim to longevity.”

Fourthly : A gradual, and not too precipitate culture of the physical and mental faculties may be properly considered as an excellent preliminary step towards prolonging life. The age of man bears a certain proportion to the growth of his various powers ; and the longer we can protract the different stages of life, the more extended will be the whole compass of our existence. As it is evidently the design of nature, that man should live longer than any of the lower animals, a very few excepted, he of course requires a greater space of time, to develop the faculties both of mind and body. Animals, which arrive soon at the perfection of their form and nature, live but a short time. Man requires upwards of twenty, and according to some, twenty-five years, before he attains to full maturity ; and if it be a rule of nature, that animals in general live eight times the number of years, which is requisite to the attainment of their perfect growth, a strong presumption arises, that the age of man might be extended to nearly two hundred years. In the works of the illustrious Bacon, and particularly in his “ Historical View of Life and Death,” are given many strong arguments to confirm this assertion. Surprising as it may appear to some, there is a possibility at least, if not a probability, that

that the limits of human life might be still further extended, if mankind could by any means be persuaded to return to that primeval state of nature, from which history and tradition have furnished us with so astonishing and almost incredible instances of longevity. It is not my purpose to inquire here into the degree of credit, which may be due to the accounts of some extraordinary facts of individual longevity recorded by the sacred historian; as the learned vary much in their opinion, relative to the computation, and whether the Solar, the Arabic, or the Lunar year, or a still shorter measure of time is alluded to. This, at least; seems to be generally admitted, that our first parents and their descendants before the Deluge enjoyed an enviable, uninterrupted state of health; that their vegetable aliment, and general mode of living, was extremely simple and nowise prejudicial; that the constitution and temperature of this globe itself must have been greatly affected and deteriorated, in consequence of the Flood, or other causes of which we are ignorant; and, lastly, that those impetuous and inordinate appetites and passions, which like flames may be said to consume the powers of life, in these times, were either then less violent, or they exerted their baneful influence at a much later period of life.

Nature resents every outrage committed on her stores, and seldom fails to punish the transgressors, both with lingering disease and early dissolution. This observation may be applied to the moral

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as well as the physical faculties of man. It is commonly said, and not without some degree of truth, that very forward children seldom live to any age; if it be explained to signify, that too early an exertion of mental powers is in most cases destructive. The same remark holds good, in what relates to the body. The inhabitants of hot climates, who frequently marry at the age of ten and twelve, or twelve and fourteen, begin to be old at thirty, and rarely survive the sixtieth year. Every thing which hastens the evolution of the natural powers, every exertion of strength disproportionate to the ability of the individual, should be carefully avoided, as it is of dangerous tendency. Hence the great art of education, the great art of living, consists in following the path of nature.

Fifthly: We should constantly inure ourselves to the habits of brooking and resisting the various impressions of external agency.—Some persons, who have paid a very rigid attention to diet, have notwithstanding been unable to reach even the middle age; while others, who have been addicted to the most irregular and extravagant courses, have been observed to live to a very advanced age.—Hence arise contradictory maxims in dietetics, which can only be reconciled by deciding chemically between the two extremes, and ascertaining pretty nearly the absolute and relative salubrity of things. All deviations from the rules of
diet

diet are in a certain degree hurtful; although these precepts may in most cases have only a relative value. Many epicures have been known to reach the seventieth and eightieth year, if they have once survived a certain critical period of their lives *. As soon as the body becomes accustomed to the use of some things, at first disagreeable and perhaps hurtful, the noxious tendency will not only be removed, but we shall find our frame hardened and strengthened by the habit of using them. Nature must stand many a shock, if she would familiarize herself to the vicissitudes of climate and opposite modes of life; but every victory she gains in these encounters, will be a means of rendering her more vigorous and unconquerable.—How could the sublime mind of FREDERIC THE GREAT have remained so long in its earthly ve-

* Experience shows, that there is a particular term of life which, if we can pass in the fulness of our health and vigour, there is the greatest probability of living to a considerable age. In the female sex this period generally arrives at, or before, the fiftieth year; in the male, it is about the sixtieth year. GELLIUS, a medical author of credit, asserts, from observation founded on long experience, that the sixty-third year is, to most constitutions, a delicate and dangerous one. The Egyptians called this epocha *Androclor*, because man begins from that time to experience a rapid decay of strength and energy. Others, rather more superstitiously, maintained that, about this period, many individuals die, or at least are subject to severe attacks of disease.—The Emperor AUGUSTUS received the congratulations of his friends, on having survived this trying period.

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hicle, if he had not improved, by constant culture and discipline, the original disposition of his temperament for a long life? A thousand other men, who have endured as much exercise of body and exertion of mind in their younger years, as he did, have yet not attained to any remarkable age.— Severe and obstinate diseases have also been thought in many instances to contribute to the prolongation of life: this is at best, however, but a doubtful point; although it cannot be denied, that many sick persons have, to all appearance, acquired additional strength and spirits, after having recovered from a distressing quartan ague, or some threatening pulmonary disorder.

Sixthly: We may take notice of a certain *steady and equal progress of life*, as highly conducive to the great object in view, whether it flows in the manner of a gentle stream, or resembles the more active course of a rapid river. The mind, when habituated to certain situations and pursuits, which almost constantly affect it in an uniform manner, is most likely to preserve its reasoning powers unimpaired and sound. He whom neither violent joy convulses, nor deep melancholy corrodes; whose drama of life is not changed by passing too suddenly from one extreme to another, may, with some probability, expect a long enjoyment of that life, with which he has become so intimate.— There are many whose days quietly glide away, like those of a simple rustic, in continual sameness: these

these persons, it is observed, generally live to a great age.

Seventhly : A very necessary cause of the attainment of a considerable age, and perhaps more so than any we have yet mentioned, is a sound state of digestion. In very old people we generally find the digestive organs in excellent condition; neither is there a surer symptom of approaching dissolution, than complaints in the stomach, or frequent returns of indigestion. The Swiss are indebted, it is thought, to the vigorous tone of their digestive powers, for the long preservation of their lives, in general, and for the great number of old people found among them. Milk and vegetable food seem remarkably well adapted to invigorate the stomach. To effect the same purpose, LORD BACON advises old persons to have recourse to strengthening baths, fomentations, and similar *external* remedies, which operate upon the absorbent system. During the use of them, however, a thin and yet nourishing moderate diet should be observed, in order to save the organs of digestion.

Eighthly, and lastly : We may recommend equanimity, or a state, when the mind, from the happy nature of its pursuits, is not yet disquieted by too violent exertions. In the literary professions, and particularly among such individuals as are placed in easy circumstances, we may discover as many instances

instances of longevity, as in the more laborious occupations. It was remarked by the Ancients, that grammarians and rhetoricians commonly attained a great age. The mind being engaged in scientific pursuits, and other objects in which we find pleasure, such as conversation on literary and mixed topics, collecting the productions of nature, a continual industry of mental research, diversifying the pursuits or amusements, yet gradually and constantly persevering in exertions towards the attainment of some principal object—all supply the vital power, as it were, with materials, like the famous cruse of oil, which proved a never-failing support to the widow of *Zeraptis*. On the other hand, it is a general remark, that deep thinkers, speculative philosophers, and those whose powers are continually absorbed in abstruse inquiry, soon feel the effects of age, from their great exertions of mental power. This must be understood, however, with exceptions, as in the cases of SIR ISAAC NEWTON, HALLER, EULER, and the pride of his nation and age, the profound and venerable KANT, still living at Königsberg.

This much I venture to say on the various rules and precautions requisite to attain a long and healthful life. Some of these particulars are, no doubt, found united in a certain proportion of the individuals, who arrive at a respectable age. It is commonly remarked also, that the inhabitants of moun-

tainous countries, for the most part, live to a greater age than those of plain and particularly marshy districts. This is in part true; yet we are not to consider the lofty regions in the Alps and Pyrenees as possessing these salubrious qualities; for it is only upon moderate heights, and in hilly rather than mountainous countries, that we so frequently meet with people of an unusual age. Persons, who are constantly travelling, are likewise said to enjoy a long and healthful life; and Lord Bacon further includes in the list of long livers, such as are of a melancholy temperament. It is a questionable point, whether the great age of many Turks is to be ascribed to the serenity of their climate, their daily use of the bath, or their uncommon temperance in eating and drinking. For, as to what we are told of their copious use of opium and other narcotics, (the former being used, by them, as an article almost as necessary as food,) we have already shown the noxious tendency of such practice; opium generating, in a remarkable degree, a disposition of the fluids, which in many respects resembles that of hypochondriacs. There is scarcely an instance of any person, that has attained to uncommon longevity, who has not been particular in his diet and manner of living. But in this respect, we cannot hope to derive advantage from excessive solicitude:—as when in want of sleep, the more we think of it, the more it shuns us; so those who most eagerly wish for longevity, are the least likely to attain

attain it. Age is a gift, which Heaven frequently bestows upon mortals, when they are asleep, or in other words, when they are scarcely sensible of it!

That many unfortunate individuals are consigned to the grave, before they are actually dead, is a truth too well attested to require demonstration. If this were not, or never had been the case, it could not have excited that degree of attention on the Continent, and particularly in Germany, which of late years has been bestowed on this important subject. The most respectable Physicians have proved by incontrovertible facts, that sick persons have often been hastily buried, or to speak more properly, smothered in their coffins, either from accidental mistake, or from the most invidious and worst motives. But, as many false and scandalous reports are generally circulated, in addition to those founded on truth, we need not wonder, that this business has not been conducted, hitherto, with that degree of calm and patient attention, to which it is justly entitled. Houses for the reception of persons apparently dead have been, at length, erected in various parts of Germany, in Berlin, Jena, Coburg, &c. This idea, at the first view of it, may to some appear whimsical; but those who know the extent of the power of vitality, and the almost infinite modifications, of which that power is susceptible, will

not ridicule a propofal, which originated in motives of prudence and humanity. Into thefe houfes every inhabitant of the town or diftrict has a right to fend the body of a deceased perfon, on paying a trifling fum per night, towards the expences of the inflitution. Here the body is deposited on a couch, lightly covered, and provided with a ftring fastened to the hand, which pulls a bell on the top of the houfe. A watchman is appointed to receive and register the bodies brought into the houfe, and to give the alarm, if neceffary. This, to fay the leaft of it, is no fmall convenience to families in a large city, crowded into narrow apartments, with a number of children, who muft neceffarily fuffer from the peftiferious exhalations of dead bodies. But this is not the principal advantage attending fuch establishments: it is unquestionably a great fatisfaction to the relatives of the deceased, to be affured that every means have been ufed to preferve from the moft dreadful of all deaths, a friend whose memory they revere.

The cafes, in which death can be clearly afcertained, are nearly the following :

1. When putrefaction has actually taken place over the whole animal frame; as instances are common, in which a partial mortification of an arm or a leg is by no means mortal.

2. In the nervous apoplexy of the aged; as fuch perfons generally die in confequence of flowly wafting diforders, various fpecies of palsy, &c.

3. If

3. If the patient expires after a long standing consumption, hectic fever, or ulcerations of the breast and lungs, diseases now very common.

4. If any of the larger blood-vessels, or other parts essential to life, have received external injury, by violent blows, bruises, or cuts, attended with great loss of blood, which could not be stopped by artificial means. If we are unable to supply the loss of this vital fluid, and to restore the organization of the parts thus destroyed; particularly if the brain, the lungs, the heart, the stomach, or any of the intestines, have suffered from a severe wound, a speedy dissolution may be considered as inevitable.

5. After chronic disorders of the intestines, obstructions of the abdominal vessels, and dropsy thence arising—or if an incurable weakness in the breast has occasioned the organic destruction, or ossification of the pectoral vessels, there is little prospect of the recovery of such a person; as these complaints of asthmatic sufferers, in general, are not in a just proportion to the whole state of the body; for instance, if their appetite and digestion have been unimpaired previous to their disease, or if their muscular strength has not suffered from the like affections.

6. In persons of tender and debilitated nerves, who have been long subject to spasms or epileptic fits, particularly if they die in child-bed, in consequence

quence of violent hemorrhages, or after repeated and oppressive agitations of mind;—in such cases there is no hope left, as it is too late to think of changing or improving the constitution of the nervous system. Lastly,

7. If a person gradually wastes away in a malignant nervous or putrid fever, or after long fasting from want of food. In these instances, it is not in the power of the medical art, to restore the shrivelled vessels to their proper tension and energy; consequently, all our efforts to reanimate the body will be unavailing.

There remains now to be stated also, in what cases and situations the symptoms of apparent death are less certain, so that some hope of recovery is still left to the disconsolate friend or relative. These are principally the following: after faintings, sudden loss of blood from diseased intestines,—in certain cases of repelled morbid matter, for instance, in the small-pox, measles, poisons, and the like, which frequently produce a spurious kind of apoplexy;—after hysteric and hypochondriac spasms and colics of a transitory kind, which have not too often recurred; after mental anxiety, perturbation, terror, and other oppressive passions, where every thing depends on a speedy removal of the causes. To this list we may likewise add the cases of drowned, hanged, and otherwise suffocated persons, or those who appear to be dead, in consequence of
a fall

a fall from high scaffoldings, without any external injury. In such accidents, an internal pressure or stoppage of the vital functions, as breathing, and circulation of the blood, not seldom produces a state of apparent death.—Even the suppressed pulse in the arteries, imperceptible respiration, the cold and stiff feeling of the limbs, the want of contractibility in the pupil of the eye, the involuntary loss of excrementitious substances,—all these symptoms of approaching dissolution should not discourage us from trying the proper means of recovering the patient's life. In children and young persons, in particular, we must not too hastily decide, whether they be absolutely dead or not;—*teething* is frequently attended with diversified convulsive symptoms, and the *tape-worm* is capable of producing the most alarming effects, which the inexperienced by-standers may unwarily ascribe to very different causes. Here, then, every possible degree of precaution is requisite, to manage the body of infants apparently dead, and above all things not to remove them from the warm temperature of the sick-room, before the last lingering spark of life is extinguished. Indeed, it must strike even superficial observers, that the hasty removal of a body from a warm to a colder temperature is highly improper and dangerous. And here the excellent rules, published by the Royal Humane Society of London, for the recovery of persons apparently

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dead,

dead, cannot be recommended in too strong terms; although some of the more violent methods detailed in their plan, might well bear a few modifications and improvements.

The knowledge of those objects which relate to the preservation of the human body, in its natural state, may be called the *Doctrine of Health*. Life and Health are, therefore, the proper objects of this doctrine; as the second department of Medicine solely relates to the preternatural state of man, viz. Disease and Death, and forms that branch of professional study, which we call '*Pathology*.'

The compass of the former science, or an investigation of the objects included in the doctrine of health, must be very extensive. It furnishes us with rules and cautions as to every thing we ought to do, or to avoid, in order to remain healthy. This useful science is properly denominated DIETETICS, or a *systematic view of all objects relative to health in general, and to food and drink in particular*.

The following Chapters, then, shall be exclusively devoted to Dietetics. My principal object will be, to lay a solid foundation for that important science, by investigating and combating the chief prejudices, which have hitherto retarded the progress of this branch of knowledge. Hence, a *System*
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of *Dietetics* must not only contain all those rules, which are requisite to guide us in the preservation of health, together with such as relate to the choice of a proper mode of life ; but should likewise inform us with regard to the favourable or hurtful influence, which *external objects* produce on the health and life of man, and teach us the just application, or practical use, of these objects.

DIETETICS include the whole of what the Ancients understood by the singular name of the SIX NON-NATURALS ; namely, *Air, Aliment, Exercise and Rest, Passions and Affections of the Mind, Wakefulness and Sleep, Repletion and Evacuation.*—Although these general heads do not comprise, strictly speaking, every thing that relates to the different functions of the human body ; yet they contain all such conditions of life, as are absolutely necessary, and the greatest part of those circumstances, which are connected with the health and well-being of the individual. In each of these particulars we are liable to commit errors, either by an intemperate use, or by an improper application of them. I propose, therefore, to lay down a System of Rules, by which we may be assisted to choose, according to particular circumstances, the best and most rational means of insuring health, and of avoiding whatever may have a contrary tendency.

Our mode of life is no longer that natural and simple one, which prevailed in the primitive ages of mankind : and it is difficult to imagine, how it

could be rendered so, in our present circumstances. Man in a state of nature had little need to attend to his health; he wanted no rules for the preservation of it; for, as the seeds of diseases are rarely scattered in such a state, instinct would be to him in most cases a sufficient guide. It now seems to be impossible to return to that primeval state, without returning, at the same time, from our present degree of mental improvement to that of pristine barbarity. We have, to all appearance, purchased our improved state of mental culture, by sacrificing to it a considerable share of our bodily welfare;—happy, however, we may still consider ourselves, if we have actually gained in moral and intellectual improvement.

Innumerable are the circumstances and causes, which have conspired to render the *true* knowledge of the means conducive to health, difficult in the acquisition, and uncertain in its application. The chief of these are probably the following, or at least they include a number of subordinate particulars:—the present very complicated method of living; the prodigious number of the employments of men; the different ways of dwelling and dressing; the endless variety of articles used as food and drink; the great diversity of national customs and manners; and the climate and situation of place;—all of these circumstances have greater or less influence, conjointly or separately, not only on the passions, inclinations, and instinctive desires of individuals, but also on the general state of health
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and physical welfare of man. By the present mode of living we are exposed to diseases wholly unknown in the first ages of the world, and we suffer from a variety of complaints, originating either from artificial habits, or from the constraint under which we labour, in consequence of blindly complying with the caprices of custom, or fashion, without perhaps apprehending any ill consequences from such pernicious practices.

Many ingenious writers have lately endeavoured to point out the disadvantages arising from causes apparently trivial. Thus the fashion of using paint, hair-powder, pomatum; of wearing ill-shaped shoes, laced stays, &c. have deservedly incurred severe ridicule and pointed censure. The custom of applying lead to earthen vessels has not escaped their attention: the dangers, however, resulting from the use of these substances, have been greatly exaggerated. Writers, with the best intentions, by a certain excess of zeal, have sometimes descanted on the worst side of the question only, by attributing to certain things many dangerous qualities, which in fact are owing to a great diversity of circumstances.

This partial method of inquiring into the sources of the evil, is, generally speaking, a serious error; as it not only leads to false conclusions, but also withdraws our attention from other more pressing injuries, to which, in a more dispassionate state of mind, our care might be directed.

Many,

Many, and perhaps the greater number, of dietetic writers have fallen into another error of equally bad tendency. They judge of every thing, according to the agreeable or disagreeable effect it produces on their own palates and constitutions, and hence they recommend their favourite articles to others; although what is salutary in particular cases, may have a pernicious tendency, if prescribed indiscriminately.

The multiplicity of our wants, all deserving attention in a Dietetic System, has also considerably multiplied the rules of health. Of all living beings, indeed, none require such rules more than those, who servilely submit to the arbitrary mandates of luxury and fashion.

Many are the open and secret enemies to the health and prosperity of man. Even the most healthy, and those who rigidly adhere to the rules of Diet, in the widest sense of the word, cannot altogether evade their attacks. Hence we should make it our study, to acquaint ourselves minutely with every thing, so as to be enabled to judge of its good or bad qualities. Whatever we are obliged to have more immediately about and around us, ranks in this class: the arrangement of our dwelling and resting places, of our beds, clothes, furniture, &c.; in the adoption of which we are less accustomed to consult what nature requires, or to contrive what may be most likely to promote

the welfare of the body, than to follow our habits, fashion, and vanity.

Some of our organs of sense, and other faculties of the body, must unavoidably suffer by our inattentive mode of living in general. From the great exertions, to which we often subject them (the eyes, for instance, in reading) they are liable to a variety of accidents, and frequently become debilitated and impaired. It appears, therefore, perfectly consistent with the plan of this work, to treat here, likewise, on the management of the eyes, teeth, and other individual parts of the body.

In a complete System of Rules for preserving the health of man, attention must be paid to the separate wants of individual constitutions; provided they be not too minute and trivial. Such a System must contain more than what relates to the first and most simple rules of living;—its precepts must not apply to the healthy alone, or those whose life is regulated by the simplicity of nature,—it should also lay down instructions, how, in all contingent circumstances, we may be secured from danger and bodily injuries. It is not, however, expected or proposed to treat of diseases which have already taken place, if the removal of them requires any thing more than a strict adherence to temperance, and the other rules laid down in this System.

CHAP. II.

Of AIR and WEATHER; their influence on the human body; the means of improving the former, and diminishing the pernicious effects of the latter.

Of Air in general.

AS soon as the infant enters into the world, the air of the atmosphere penetrates into his lungs, filled up till then with aqueous mucus, and renders them fit for the circulation of the blood, which now immediately commences. From that moment the alternate extension and contraction of the breast and lungs, the inspiration and expiration of the air, or in other words, the function of *respiration*, becomes indispensably necessary to the preservation of animal life. While the child remained with its mother, it required no external air. As soon, however, as it has drawn breath, as soon as the lungs are opened, the act of respiration begins, is constantly renewed through life, and can never absolutely cease, but with death. As, therefore, air is the principal medium, by which animal life is supported, it becomes highly important to acquire correct ideas of this refined substance, that pervades all the parts of animate and inanimate matter, and
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is so essential to man, for the preservation of both his life and health.

Air is that colourless, transparent, compressible, heavy, and elastic fluid, which every where surrounds our globe, and which generally receives the name of *Atmosphere* *. This ambient matter, in its

* Our bodies are equally pressed upon by the incumbent atmosphere, and the weight they sustain is equal to a cylinder of the *air*, whose base is equal to the superficies of our bodies.—Every foot square of this superficies sustains a quantity of *air* equal to 2660 lbs. ; for $76 \times 35 = 2660$; and so many foot square as is upon the superficies of a body, so many times 2660 lbs. does that body bear : so that if the superficies of a man's body was to contain 15 square feet, which is pretty near the truth, he would sustain a weight equal to 39,900 lbs. The difference of the weight of the air, which our bodies sustain at one time more than at another, is also very great ; that between the greatest and the least pressure of air upon our bodies has been proved to be equal to 3902 lbs. Hence it is so far from being a wonder, that we sometimes suffer in our health by a change of weather, that it is the greatest miracle we do not always do so. For when we consider, that our bodies are sometimes pressed upon by near a ton and a half weight more than at another, and that this variation is often very sudden, it is surprising that every such change should not entirely break the frame of our bodies to pieces. And the vessels of our bodies, being so much strained by an increased pressure, would stagnate the blood up to the very heart, and the circulation would quite cease, if Nature had not wisely contrived, that when the resistance to the circulating blood is greatest, the *impetus*, by which the heart contracts, should be so too. For upon increase of the weight of the air, the lungs will be more forcibly expanded, and thereby the blood more intimately broken and divided ; so that it becomes fitter for the

its common state, is combined with a great variety of foreign ingredients. It contains *water* in a state of solution; by means of water it combines with salts; in many places we find it impregnated with *sulphur*, with putrid exhalations, and the like; nay, frequently we even meet with earthy particles floating in this element.—When all foreign ingredients are separated from it, the subtile aërial body still remains of a compound nature, and is by no means a simple elementary substance, as was formerly believed.

According

the more fluid secretions; such as that of the (supposed) nervous fluid, by which the heart will be more strongly contracted, and the blood's motion towards the surface of the body being obstructed, it will pass in greater quantity to the brain, where the pressure of the air is taken off by the *cranium*, upon which account also more spirits will be separated, and thus the heart too more enabled to carry on the circulation through all passable canals, while some others towards the surface are obstructed. The most considerable alteration made in the blood upon the air's greater or less pressure upon the surface of our bodies, is rendering the blood more or less compact, and making it crowd into a less, or expand into a greater space in the vessels it runs in. For the air contained in the blood always keeps itself in *equilibrio* with the external *air* that presses upon our bodies, and this it does by a constant effort to unbend itself, which is always proportional to the compressing weight, by which it was bent; so that if the compression or weight of the surrounding air be ever so little abated, the air contained within the blood unfolds its springs, and forces the blood to take up a larger space than it did before.

From Quincy's New Medic. Dict. Article, Air.

According to the late discoveries in chemistry, the ærial basis of the atmosphere consists of *three* different species of air, namely of pure, respirable, or dephlogisticated air; of azotic, or phlogisticated air; and of fixed, ærial, or carbonic acid air.—The proportion of the first, namely, pure or vital air, consists, according to the French Chemists, who have given it the name of *Oxygen*, in 27 or 28 in the hundred parts; the second, *viz.* the *Azote* of the French, in 72 or 73 in the hundred; and the third, namely the *Carbonic acid air*, is about one part only in the hundred*.

Oxygen

* The accurate experiments made by the late SCHEELÉ and BERGMAN, in Sweden, do not much differ from those of the French Chemists, with respect to these proportions. For, according to Scheele and Bergman, the common proportion of vital air or oxygen, in the atmosphere, is about $\frac{1}{4}$; that of azote about $\frac{1}{8}$; and that of carbonic acid nearly $\frac{1}{10}$; the last of which, by the French, is computed only at $\frac{1}{100}$ part, that is, exactly five parts in the hundred less than the Swedish philosophers maintain.

The following is a concise history of *Oxygen*:—In August, 1774, Dr. PRIESTLEY, and much about the same time Mr. SCHEELÉ in Sweden, discovered this respirable part of atmospheric air, or rather they exhibited it, for the first time, in a pure state. This elastic substance was first called *dephlogisticated air*, agreeably to the hypothesis of *phlogiston*;—afterwards it went under different names, as pure air, fire-air, vital air, until the late hypothesis of *Oxygen*, or the acidifying principle, has procured it the name of *oxygenous gas*.—But still more diversified than these names, are the theories which have been proposed on the nature and properties of this species of air, during the last twenty years. With
Priestley,

Oxygen is much better adapted to the respiration of animals, than common atmospheric air. If two animals be enclosed in vessels, one of which contains pure oxygen, and the other common atmospheric air, in proportions equal to the size of the animals, the former in the oxygen will be found to live from six to seven times longer, than the latter in

Priestley, it is the purest air freed of all phlogiston; with *Scheele*, it is the nitrous acid deprived of its water; according to *Bergman*, it is one of the unknown constituents of nitrous acid; with *Fontana*, it is the dephlogisticated nitrous acid; *Forster* considers it as air united with fire; Mr. Watt of Birmingham thinks to find in it elementary fire combined with hydrogen or inflammable gas; *Achard* and *Gren* formerly believed it to be water combined with much Caloric, or the principle of Heat; but *Gren* now maintains in his System of Chemistry, that it is the unknown basis of vital air combined with Caloric;—if we believe *Wesstrumb*, it is elementary air in a state of combination with Caloric, but the basis of the former cannot be discovered; according to *Fourcroy*, it is an unknown elementary matter united with inflammable air; in the opinion of *LAVOISIER* it contains the acidifying principle, *Oxygen*, and the principle of Heat, Caloric; according to *De la Metherie*, it is an unknown substance combined with water and fire; &c. &c.—Independently of all opinions and hypotheses, which have been started upon the nature of this substance, namely, *pure air*, it is unquestionably a very effectual remedy. And why should not OXYGEN deserve that fame, since both physicians and patients agree, that all who *artificially inspire* it, experience the most agreeable sensations? It produces a sense of lightness and animation, which it is impossible to express by words, and which can be understood by those only, who have experienced its effects.

in common air. It is properly this oxygen which we inspire, and which is the grand medium of supporting animal life. People apparently dead, or in a state of suffocation, have been instantly recalled into life by it, and from the corresponding testimony of several respectable physicians, it appears to have been employed with advantage in many obstinate diseases. The celebrated INGENHOUS therefore gave it the name of *vital air*. This species of air promotes combustion in a very high degree. A candle will burn in it from six to seven times longer than in common air, with a much greater degree of heat, and a more brilliant flame. Bodies, in a glowing state, are immediately inflamed, when put into oxygenous gas; and even metals, which are not very fusible, are melted in it, and converted into calxes with the greatest facility*.

Azote, by others called phlogisticated, mephitic, corrupted, or suffocative air, is absolutely irrespirable, and not miscible with water. It arises from the change which atmospherical air undergoes in every process of combustion, putrefaction, respiration,

• Is it not rather singular, that this oxygen or pure air has never yet been found evolved from nature in its unmixed original state? It may, however, be obtained, in great quantities, by strongly heating various mineral substances, particularly Nitre, Manganese, Mercurey, and other metallic calxes;—by the exposure of spring-water to the rays of the sun; and by exposing the fresh leaves of plants to the same vivifying power.

respiration, and the like, whether produced by nature or art*.

Azote enters into no combination with water, but may be rendered less hurtful by shaking it with that fluid: this accounts in some measure for the salubrity of the sea-air. It greatly promotes the growth of plants, and readily accumulates in apartments filled with a number of people, or containing articles fresh-painted with oil-colours, or in which strongly fragrant flowers are kept, without having any access of fresh air. In visiting such situations, much caution is necessary; as diseases of the breast and lungs are too frequently the consequences of neglect, obstinacy, or ignorance.

The *carbonic acid* of the French is the *fixed air* of Dr. BLACK, and the *aërial acid* of BERGMAN. This species of air is miscible with water; but in its pure state equally irrespirable as the Azote. It derives its origin, partly from the vinous fermentation of vegetables, and some animal substances, and partly from the mild alkaline salts and earths with acids.

* Besides the process of respiration continually going on in numberless animals, that of combustion of candles, coals, wood, &c. the air is likewise corrupted by sulphur, by lime and water, by lime and sal ammoniac, by lime and acids, by lead and vinegar, by the liver of sulphur and other matters, by the mixture with nitrous air, by the explosion of combustible substances, by the putrefaction of animal and vegetable bodies;—nay, even by the shaking of lead, and particularly of small shot, in the open air;—on all which occasions more or less of fixed or carbonic acid air is produced, besides the incalculable quantities of Azote.

acids. Much of this air is found in mines, where it frequently distresses the workmen by its suffocating qualities. It is also observed in most of the mineral waters, where a stratum of it sometimes swims upon the surface of the well. These waters, together with the fermented liquors, which contain a considerable portion of fixed air, receive from it the well known pungency so agreeable to the palate. Hence flat and insipid beer or wine may be corrected and restored to its former briskness, by the addition of fixed air evolved from chalk and vitriolic acid; or by mixing it with new beer or wine in a state of fermentation.

This species of air quickly extinguishes fire, and strongly attracts the vapor arising from candles. As it is unfit for respiration, animals cannot live in it. The warm-blooded animals die in it much sooner than any other; those of an amphibious kind somewhat later; insects are only half-killed by it; irritability is suddenly destroyed, and the heart of an animal so deprived of life, though still warm, no longer exhibits any signs of motion.

There is another species of mephitic air, which is not miscible with water, which burns with a flame, and if mixed either with atmospheric air, or oxygenous gas, instantly catches fire and is exploded: this has received the name of inflammable air*,
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* This air may be obtained in a great variety of ways, from all substances liable to inflammation, or containing
M 2 combustible

and deserves a place here, although it cannot be considered as a constituent part of the atmosphere.

With respect to the *specific gravity* of the different airs before enumerated, it is in this place only necessary to observe, that the heaviest is the fixed air, or carbonic acid gas ; next to this comes the azote and oxygen, both of which are heavier than the common air of the atmosphere ; and lastly, hydrogen, or inflammable gas, which is the lightest of all ; for it is even lighter than the purest atmospheric air.

When the atmosphere is too much impregnated with any of the mephitic gases, its influence on the human body is extremely noxious. Thus we see many of the workmen in lead mines dying in the
prime

combustible matter, by means of heat, fermentation, acids, and the like ; nay even from metals, by directing the stream of boiling water through a red-hot metallic tube.—It is the spontaneous production of nature, throughout her *three* kingdoms. In mines, in subterraneous caverns, and particularly in coal-pits, it is known by the name of *choak-damp*. It is copiously generated in the intestines of living animals, and is frequently met with in common sewers, burying grounds, and places where dead animal bodies are exposed to putrefaction.

The white Dittany, (*Dictamnus albus*, LIN.) when in flower, generates so great a quantity of inflammable air, that the atmosphere around it has been observed to catch fire. In swamps, pools, and other stagnating waters, where a number of plants, sagc, calamus, and the like, are putrifying, we find a species of inflammable gas, which is known by the name of *marsh-air*, or more commonly, the *ignis fatuus*.

prime of life, of an obstinate and incurable colic which is attended with the most painful obstructions.—Painters, glaziers, potters, and manufacturers of glazed earthen ware, are from a similar cause exposed to the same dreadful disease; being obliged to make use of great quantities of lead * in different forms.

It is almost unnecessary to mention, here, the frequent and sudden deaths that have taken place from the explosion of inflammable air in mines, or from the opening of pits, of old wells, and other secluded places. Neither is any thing so much calculated

* Whether this insidious and deleterious metal be communicated by inhaling its vapours through the lungs, or by absorbing them through the pores of the skin, the effects of it are equally dangerous and fatal. The internal use of sulphur, and both the internal and external use of vegetable oils or animal fats, are the only antidotes hitherto discovered against this virulent bane of the manufacturer and the artist.

Most trades and occupations are subject to peculiar diseases; sometimes the materials of the manufacture have a pernicious influence on the body, and sometimes the nature of the employment is hurtful; whether this requires a sedentary life, a reclined, stooping, or standing posture; or whether it is performed in a confined air, or at a great fire, and the like.—Hence millers, hairdressers, and stone-masons frequently die of a consumption of the lungs, in consequence of the minute particles of dust which they are continually obliged to inhale.—Manufacturers of wool, and particularly hatters, are much troubled with obstinate cutaneous diseases, and in like manner those who attend a business accompanied with grease and dust, suffer more or less from the consequences of uncleanness.

calculated to corrupt and poison the air, to fill it with noxious vapours, and to generate diseases, as the *burying-grounds* established within the walls of populous cities, where human bodies are deposited, as if with an apparent design to produce an atmosphere, which is particularly deleterious to the tender lungs of children, and in no small degree hurtful to adults.

As the mass of atmospheric air is incessantly corrupted by the respiration of men and animals, by the burning of so many natural and artificial fires, by the dissolution and putrefaction of innumerable substances, and by various other phlogistic or desoxygenating processes, it would at length become altogether incompetent for its original designation, if Nature had not provided effectual means for its improvement and restoration. Among the most powerful of these, we may place the growth and vegetation of plants.—For this very important discovery we are indebted to Dr. PRIESTLEY, who was so fortunate as to hit upon it, after he had long employed himself in fruitless attempts, to improve and restore corrupted air by artificial means. He found, that such air as had been rendered mortal by the breathing of animals, which had expired in it, was again so completely restored by the vegetation of plants, that, after the lapse of some days, an animal could live in it with equal ease, and for the same length of time, as in a similar quantity of common atmospheric air.

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These experiments, indeed, did not succeed with some Naturalists; and Priestley himself, upon repeating them with different plants, found the results rather varying and doubtful: but Dr. INGENHOUSZ removed the greater part of these difficulties, by his book, “Experiments upon Vegetables, 8vo. London, 1779.” This ingenious philosopher remarked, 1st, That most of the plants have the property of correcting bad air within a few hours, when they are exposed to the *light of the sun*; but that, on the contrary, *during the night*, or in the *shade*, they corrupt the common air of the atmosphere;—2d, That plants, from their own substance, afford a very pure dephlogisticated air, or Oxygen, when exposed to the rays of the sun; but a very impure air or Azote at night, or in the shade;—3d, That not all the parts of plants, but only the green stalks and leaves, particularly through the sides opposite the soil, produce this beneficial effect;—4th, That the disengagement of pure or vital air begins after the sun has risen and stood for some time above the horizon; that it ceases altogether with the termination of day-light; and that the disadvantage arising from the impure exhalation of plants, during the night, is far exceeded by the great advantage they afford during the day; inasmuch, that the impure air, generated by a plant during the whole night, scarcely amounts to the hundredth part of the pure vital air or Oxygen, exhaled from the same plant within two hours of a serene day.—Thus we dis-

cover one of the most striking phenomena in the œconomy of nature ; since the vegetation of plants continually counteracts the noxious effects of respiration, combustion, and putrefaction *. In this manner, the atmosphere is constantly preserved in that necessary state of purity and temperature, which is the most salutary both to animals and vegetables.

Having premised these general observations on Air, we might now proceed to consider the results which experience furnishes, in respect to the more determinate influence of the air, according to its different properties. To prevent, however, any misapplication of those rules which are established by the accumulated observations of ages, it may not be improper to introduce here some previous *general remarks*, relative to the individual use and advantage to be derived from a connected view of *Dietetics*.

First,

* It should be recollected here, that when the growth of plants is interrupted by the cold of winter, so that they no longer generate a beneficial air to purify the atmosphere, Nature has ordained it, that this very cold of the winter itself contains the most effectual virtue to stop the progress of putrefaction. We further find, that in the most unwholesome, and particularly in marshy countries, those very plants appear to be very profusely distributed, which most eminently possess the property of purifying the air. And as the pure air or oxygen is of greater specific gravity than the common air of the atmosphere, it is perfectly consistent with the operations of nature, that the former should settle towards the lower side of the leaves of plants.

First, it may be laid down as a preliminary observation, that the rules contained in this work are not to be considered as strictly applicable, in every instance, to the particular situation of any individual, or as essentially necessary to the preservation of his health. It is not so much the healthy, as the valetudinary and infirm, who stand in need of minute precepts for their conduct; and even the latter ought not to engage themselves too solicitously in the compliance with them; since it is only a very limited number, that require such accurate attention.

A vigorous and persevering method of inuring ourselves to the unavoidable difficulties and diversified accidents in life, is of greater importance to the preservation of health, than all dietetical rules whatever. Man is capable of undergoing all the vicissitudes and inconveniencies of air, weather, and climate; he can digest any articles of food, if his stomach has not been wantonly indulged; he can sustain the severest bodily exercise and labour, without paying too minute attention to the usual time and regularity, when his employment or duty require such exceptions. But he who from his infancy has been treated with effeminating tenderness, or who, after having been previously accustomed to a hardy mode of life, is afterwards seized with the whim of bestowing too much care on his health, will suffer from the most trivial hardships, catch cold at every change of the air; every heavy or

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high-seasoned dish is oppressive, and the smallest deviation from the rules of temperance makes him indisposed. Yet, by the same rules, every healthy person will learn, that the grand secret for preserving himself in that state, consists principally in the art of moderating his desires and enjoyments. We may thus arrive at the knowledge of such things, as are *generally* conducive to the welfare of the body; and more than this ought not to be expected. Rules of health, *universally* applicable to the state of every individual, are not discoverable in nature; nor can they be derived from any experimental knowledge we possess of corporeal objects.—The best general precept is, that every one study himself and his own particular constitution; that he choose and regulate his mode of life accordingly; and that his own experience must guide him in whatever he finds most suitable and convenient.

We have learnt the effects produced on the human body by the atmosphere and the changes of the weather, partly from observations made by ourselves and others, and partly from their influence on inanimate matter, by which we can judge in some measure of its analagous effects on the human frame; but we are not thence entitled to conclude that our knowledge, in this respect, is either complete or infallible. Observations may frequently deceive us, since the human body, besides the weather, is incessantly exposed to the effects

effects of other external agents, which may easily elude our attention. Further, the atmosphere surrounding us, besides the properties possessed by it, which are cognizable by our senses, or discoverable by the assistance of particular instruments, may yet be impregnated with substances which have hitherto escaped our researches, and which nevertheless may have the power to effect important changes. Lastly, we ought not to consider the arguments deduced from analogy as strictly conclusive; we should remember, that the effects of external objects on the living animal fibre are, in many instances, totally different from those, which they produce on lifeless or inanimate bodies.

Recommending these general precautionary remarks to the consideration of the reader, I shall now proceed to consider those particular and positive effects, which the different states of the atmosphere produce on our frame, and in what manner they are found, in a variety of cases, to influence our health.

Warm air relaxes the solid parts of the body, and occasions a stronger circulation of the fluids. *Heat* is chiefly oppressive to the Nerves; hence the tender and the infirm suffer severely in hot weather; hence hysteric and hypochondriac complaints, convulsions, and diarrhœas. *Cold* renders bodies more compact, particularly the solid parts of the animal structure, such as the muscles, nerves, bones, &c. They become more elastic in winter; the appetite
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for food is stronger, and digestion easier and quicker. On the contrary, the resistance of the fluid parts becomes so great, that even the increased powers of the solids cannot overcome it, if the cold be too violent. In winter the blood is much disposed to inflammations; hence stitches in the side, inflammatory sore throats, rheumatisms, &c. In persons who take little exercise, the fluids are apt to stagnate, and the solids to chill during the winter;—upon the whole, however, the effects of cold weather may be rendered less hurtful, and even salutary to the body, if the necessary exercise be not neglected.

Damp or *moist air* suddenly relaxes and debilitates; it occasions a slowness in the circulation of the fluids, which gives rise to stagnations; it impedes both the circulation of the blood and the secretion of humours, by checking the insensible perspiration. If the moisture of the air increases, we experience an unaccountable torpor and *ennui*; with the loss of energy we lose our gaiety, and the mind is depressed with the body. Damp places and districts are always unwholesome, but they are particularly so in cold weather. Moisture, by diminishing perspiration, produces disorders of the throat, the breast, and the abdomen. The moist night-air in hot climates, and after hot summer-days, is no less hurtful. But the most dangerous and fatal effects on the human body have been observed to arise from moist air accompanied with hot

hot weather ; for when moisture impairs our energy, heat does so in a still greater degree, by opening the pores through which the moisture penetrates into the body, predisposing every part of it to putrefaction and dissolution. This accounts for the great mortality prevalent during the hot season at Batavia, and some of the West India islands.

Dry and cool air, from its possessing a due degree of elasticity, promotes in an extraordinary degree the serenity and alertness of mind and body ; hence it is found uncommonly salubrious to hypochondriacs. But a dry and very cold air generates inflammatory diseases ; because it inspissates the blood. —Dry and hot air affects us like heat, and enervates the body. But a dry air, which is not too warm, is both agreeable and healthy.

Great and *sudden changes* from a warm to a cold, or from a light to a heavy air, are highly injurious to valetudinarians as well as to the healthy. Soldiers in camp, and sometimes, travellers feel very severely the bad effects of cold and moist night-air, after long marches and journies. Weakly and infirm persons have frequently ominous sensations, previous to any remarkable changes of the air.

A moderately heavy and elastic air is the most pleasant and salutary to the human body ; hence nature has not assigned us our constant residence on the summits of mountains. Yet a light and rarefied air, such as is felt on the highest mountains, is not so unfit for respiration, nor does it manifest so

noxious

noxious an influence on the human body, as was formerly believed. The latest travellers assure us of the contrary, and speak in decisive terms of the salutary effects of the air, during a short stay in those elevated regions.

Among the different WINDS—which are nothing else but strong commotions of the air—the long continued *North wind* is comparatively the most wholesome; it purifies the atmosphere of noxious vapours, renders the air serene and dry, and thus imparts to the human body elasticity, vigour, activity, and a lively colour. It is, however, troublesome to persons of tender habits, and occasions in them, cough, inflammation of the throat, pain in the side, obstructions, and febrile diseases. The *South wind* weakens and relaxes the body, and is very apt to produce catarrhal affections. The *Morning wind* is very drying; but *Evening winds* are cool and moist, being generally accompanied with rain and changeable weather. All these winds differ materially in their qualities, from the situation of the place, and accordingly as they blow over a Continent, over the Ocean, or over high mountains and icy regions, from which they carry along with them more or less of cold and humid particles. But, upon the whole, too dry weather is always more healthy, than that which is too moist.

Of the four SEASONS of the year, the *Autumn* is the most unhealthy; because then the particles of perspiration are not only retained in the body, but
likewise

likewise in a state inclining to putrefaction. This disadvantage, however, may be easily obviated by guarding ourselves with proper drefs and choofing a fuitable diet. Too light a drefs, and too thin stockings, are not advisable at this feafon. The *Spring-feafon* is, in general, the fafeft and moft healthy. Spring, and the beginning of *Summer*, are moft falutary to children and young perfons; while the Summer, and the beginning of *Autumn*, agree beft with the aged. The latter end of Autumn, and the fucceeding *Winter* are commonly the moft healthy feafons to perfons of a middle age.

It has been remarked by medical men, that certain difeafes appear and difappear according to the different feafons. Thus, putrid and bilious diforders prevail in Summer; inflammatory difeafes in Winter, and the catarrhal, mucous, and gaftric or ftomachic affections in Spring and Autumn. It has been further obferved, that in Spring the blood ufually circulates more freely; hence probably arofe the ancient practice of blood-letting, and taking laxatives at certain regular periods; both of which I have already pointed out in the preceding Chapter, as being of a dangerous tendency, and always hurtful to the healthy.

As the vegetable kingdom is renewed in Spring, and as vegetation, in general, is moft lively in that feafon, there can be little doubt, that the pure vital air is then moft copioufly evolved, by means of the folar light. Hence it follows, that
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the vernal air is more wholesome than that of Autumn, which is saturated with corrupted and putrescent particles. Still the cold of Autumn, and the frequent winds then prevalent, prove extremely efficacious in counteracting the baneful effects of corruption and putrefaction.

If the temperature of the air corresponds with the natural constitution of the season, we may expect what is called a healthy year; and the usually prevailing diseases will be of a mild nature; but if the weather does not agree with the general laws of the season; if (for instance) the Winter prove warm, or at least moderate, or the Spring cold and severe, with sudden alternations of heat, we may expect to find the year pretty generally marked with serious and obstinate diseases.

The temperature of the air depends not a little on the natural situation of the country, whether it lies high or low; whether its mountains oppose or give a free passage to the winds; whether it contains flowing or stagnating waters or morasses, and whether it is open or covered with woods.—Country air, upon the whole, is always purer than that of towns, narrow streets, and crowded buildings.

All *strongly scented objects* are more or less pernicious; as well those of a disagreeable smell, as the greater number of fragrant perfumes. The latter, if too strong, are more particularly dangerous, as the sense of disgust does not naturally incline us to avoid them. Among these may be
compre-

comprehended all vegetable odours strongly volatile and pungent, and which thereby stimulate and stupify the nerves. Hence people, who carry large nosegays in the hot days of summer, are apt to find themselves variously and strongly affected, and are easily laid asleep. From this apparently innocent cause, head-achs, vertigoes, fainting-fits, and apoplexies have frequently been produced in persons of a plethoric habit. These, as well as people of a delicate constitution, are liable to such affections, from the fragrance of many balsamic plants, but particularly from the strong scent of lilies, roses, pinks, the blossoms of oranges, hyacinths, and the like.—Many flowers emit a more powerful fragrance in the night than in the day time, and the effluvia of several trees and other vegetable bodies, are peculiarly dangerous and sometimes mortal. Of this nature are the walnut and yew trees, under whose shades persons have actually died, who had fallen asleep; and particularly under the deadly *Upas* of Surinam, and the no less poisonous *Manchineel* tree of the West Indies.

Aromatics of every kind taint the air in a similar manner, introducing into the human body particles foreign to its nature, all exciting more or less an inclination to sleep. Saffron and hops have sometimes proved fatal, the former in particular having produced a sleep terminating in death, in those incautious individuals, who had lain down in the warehouses or upon the bags, in which it was

packed. Ambergris and musk are also, on account of their too strong fragrance, very hurtful to persons of an irritable and nervous temperament.

Dwellings in the vicinity of lakes, fens, and marshes are exposed to all the noxious effects of a moist atmosphere, namely, to the various species of intermittent fevers or agues;—on the other hand, it has been observed, that persons living on the banks of Rivers, though at times subject to these, are not very liable to other diseases, and that running water has a tendency to purify the air, when it is saturated with inflammable particles.

Too sudden a transition from warm to cold air, or the reverse, is pernicious; but to exchange, however suddenly, an unhealthy atmosphere for a healthier, is at all times safe and highly advisable. Numberless instances have proved, that such as were constantly indisposed in the corrupted air of a town, very quickly recovered their health, on removing to the purer atmosphere of the country. Yet the question, *Which air is the most wholesome to live in?* will admit only of a conditional answer. We must here attend not only to the particular constitution of the air, but also to the nature and habits of the individual. Neither should we too hastily pronounce every air unwholesome, that does not appear to agree with us. The air of every climate, whether hot, cold, or temperate, may be called healthy, provided it be pure and clear, and occasionally agitated by wind: but a gross atmosphere,
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and one loaded with animal or vegetable exhalations, is certainly deleterious. After all, perhaps the longevity of the inhabitants may be considered as the best evidence of a healthy district. Thus we find uncommonly long-lived persons in high countries, or such as are visited by frequent winds, as also in small sea-port towns. In villages and places thinly inhabited, the proportion of aged people is considerably greater than in cities or populous towns. This may be ascribed partly to a less degree of corruption in the air, and partly to a more simple mode of life prevailing in such places: for wealth and riches usually keep pace with the increase of population; and their concomitant effects are greater luxury and extravagance in living; and if the numerous chimney-fires of our populous cities did not serve as so many well-contrived machines for rarefying the atmosphere, the mischiefs that might ensue would perhaps be incalculable.

Of the Improvement of Air in Dwelling-houses.

A house built on a rising ground, on a healthy soil, in an open dry country, and neither exposed to the greatest degree of cold in winter, nor to the highest point of heat in summer;—such a house may be said to stand in a healthy situation. Hence those apartments are the most healthful as well as comfortable to the individual, which enjoy a pure

and free circulation of air in summer, and the cheering rays of the sun in winter: the heat of summer being considerably tempered by the former, and the severity of a cold winter much abated by the latter. Further, a proper size and height is requisite to constitute a healthful apartment; for low rooms are detrimental to health, particularly when they are inhabited by large families, and when they are seldom aired, or rather, which is frequently the case, when every access of air is carefully excluded by close shutters, curtains, screens, &c. The most proper place of residence in winter is one with a southern exposure, not only as being more dry, but also more cheerful, and therefore attended with a favourable influence on the spirits. In summer, the situation of a room may be chosen either to the North or to the East, the latter of which is preferable, because it admits the first enlivening rays of the Sun.

Although it is not in every person's power to choose his habitation agreeably to the laws of health; yet this choice of a pure and healthy air is not sufficiently attended to, and it certainly deserves as much consideration in purchasing an estate or country-house, as the quality of the soil and other lucrative advantages.

The local constitution of the air depends not merely on the exhalations of the soil itself, but likewise on the different vapours, conducted to and blended with it by the winds, from adjoining places.

places. Thus in a dry and sandy country, considered of itself as healthy, the air may be rendered extremely unwholesome from the vicinity of marshes or other stagnating waters.

The better to judge of the salubrity of the air in any district, we should examine the properties of the wells and springs; for *air* and *water* both absorb the saline and mineral particles of the soil. We may pretty certainly conclude, that a country producing good water, is provided likewise with a salubrious air. As the best water is tasteless, so the purest air is free from any smell whatever.

The most certain marks, by which to distinguish, whether the air be damp or not, are the following: the walls or tapestry change their colour; bread in closets acquires a mouldy surface; sponges in the rooms retain their moisture; loaf-sugar turns soft; iron rusts; brass and copper acquire a green colour or verdigris; and wooden furniture moulders and crumbles to pieces.

The sitting-room ought, if possible, to be above the ground floor, or in the second story; it must be constructed so as to admit a free current of air; but if this cannot be done, it should be frequently aired by opening the windows in dry weather, or by fumigating the room, either with vinegar dropped upon warm stones, or evaporated in a basin over a rush-light, or by smoking the room with sugar, juniper-berries, and the like.

Every room is filled with *three* different *strata* of air: 1. the lower part of the room contains the heaviest species of air, namely, fixed or carbonic acid gas, particularly in rooms situated on the ground-floor, or even under ground; 2. the middle part of the room is filled with the lighter atmospheric air; and 3. the uppermost stratum contains the lightest or inflammable air, the most corrupted of the three, in consequence of the processes it has undergone by respiration and combustion. In lofty apartments this contaminated species of air is not inspired by the lungs; because the middle stratum, or the most wholesome of the three, extends to a height above that of a man.

A continual change of the air, by opening the doors and occasionally the windows, however advisable, is yet not sufficient to preserve a healthy atmosphere in an apartment. For this important purpose the following improvements may be suggested as useful: 1st, small apertures in the ceiling of the room; or through the walls close to the ceiling in an oblique direction, so that the rain and snow cannot penetrate into it; 2d, Ventilators; that is, small moveable wheels made of brass or sheet-iron, which are applied to some part of the window-panes, and set in motion by the pressure of the external air. This is an excellent contrivance to introduce fresh atmospheric air into a room, by occasionally opening and shutting the door.

door. The most proper distance of placing these ventilators is about seven feet high from the floor ; 3d, Air-tubes running in a straight direction from the door to the fire-place, or rather to the wall of the chimney, and concealed under the floor of the room. As such tubes, however, are very expensive, and appear better calculated to convey the smoke, when all means have been tried in vain, than to conduct the corrupted air from the upper part of a room, I shall subjoin a better and much easier method of effecting this purpose. It is the late discovery of a physician in France, who contrived it with a view to save the great expence of ventilating or airing large wards in hospitals, filled with patients who labour under putrid distempers, particularly in the heat of summer. He caused a number of small holes to be made in the uppermost part of the window-frames ; into these holes he placed from without an equal number of funnels, presenting an aperture of nine or twelve inches diameter, and terminating in the inside almost in a point, or at least not exceeding the size of a small quill. By means of these simple machines the air in sick-rooms was so effectually renewed, by the great and constant pressure of atmospheric air from without, that any other artificial process for sweetening the putrid air in a large hospital was judged to be unnecessary.

Above all things, the windows and doors of sitting and bed-rooms, when it can be done conveniently,

veniently, ought to be left open for a certain space of time, every day. This, however, requires to be done at the proper time, neither too early in the morning, nor when it grows dark in the evening, during the vernal and autumnal months; nor at the time when the horizon is overspread with a thick fog. The windows should be opened, when the air is pure and serene; or, in general, when there is less danger to be apprehended from the external air than from that within. Sometimes it may be proper to make use of what is called *pumping* the room, or moving the door backward and forward for some minutes together: but in spring and autumn our sitting-rooms, and even in winter bed-rooms, ought to be thoroughly perfused every clear day, by currents of fresh air, for a considerable time.

In the hot days of summer, the windows may be opened early in the morning and in the evening, in order to cool and to refresh the heated air of the room by that from without. It is however not safe, (and has sometimes proved fatal) to leave the windows of a bed-room open at night during the summer-months, as there is no small hazard of checking perspiration by the cool night-air; the susceptibility of the pores being then very much increased by the heat of the day, and the warmth of the bed. Rooms which we inhabit in the day-time may be safely left open during the night.—In summer-houses or such as are surrounded with
plants

plants and trees, it will be proper not to open the windows of bed or other rooms, till some time after sun-rise, and to shut them at sun-set: they require also to be opened and shut sooner, when it is hazy, than in serene weather.

The airing of apartments should not be neglected even in winter, as our coal-fires alone are not sufficient to carry off the corrupted particles of air, unless they be assisted by ventilators.—Here I must oppose and contradict a prevailing, yet mistaken notion, that fire in a room where the windows are open introduces moist air. On the contrary, the most proper time for opening the windows is after lighting up a brisk fire; as the warmer air of the room is then powerfully attracted by the colder external air, and thus the corrupt particles of the atmosphere are most speedily dissipated.

In *moist* and *cold* air, the dress should be somewhat warmer than usual: Flannel may then be worn with double advantage next the skin, and the rooms we inhabit should be warmed, or at least smoked with the berries of Juniper or similar shrubs. Smoking is likewise attended with this advantage, that it contributes to dry and in some degree to warm the air.

In *moist* and *warm* air the explosion of a little gunpowder will be of use, or, more safely, vinegar may be evaporated, and the floor and walls sprinkled over with this excellent antiseptic.

Hot

Hot and *dry* air may be tempered by placing vessels filled with cold water in different parts of a room; or, as is often practised in hot climates, by sprinkling water over the floor.—The greater or less degree of corruption of the air in an apartment depends very much on the kind of labour or exercise performed in it: Six busy watchmakers will not corrupt the air nearly so much as two carpenters would do in the same room and time; hence appears the necessity of appropriating lofty rooms, instead of low garrets for the workshops of mechanics.

Green plants and flowers placed before the windows are both an agreeable and useful ornament, if they are not of too strong fragrance. In serene weather, it may be expedient to strew fresh plants (not flowers) in a dwelling-room, exposed to the rays of the sun, taking care, however, to remove them as soon as the sun withdraws. This method of exposing plants, or even the branches of trees with green leaves, in apartments, may have a beneficial influence on valetudinarians, and particularly on asthmatic persons, as vital air or *oxygen* is thereby generated, and introduced very gradually into the lungs.

Large trees with thick foliage should not be placed very near the windows of a house; for, besides that they obstruct the access of daylight and fresh air, and have thus a tendency to make the rooms damp, their exhalations in the evening, and during the night, are by no means wholesome.

wholesome. Trees planted at the distance of eight or ten yards from the house, do not prevent the free access of air; they present an agreeable object to the eye, and cannot be too much recommended, both on account of their cooling shade in summer, and the salutary exhalations they emit during the day.

It has been already mentioned, that the burning of candles corrupts the air; whence the custom of illuminating assembly or other large rooms, with a *superfluous* number of candles, must be very detrimental. This extravagance becomes still more dangerous in places where, beside the crowd of people, great quantities of provisions, dressed with the richest spices of the East and West, contribute to saturate the air with the most heterogeneous particles. And as persons of tender lungs must suffer extremely in such an atmosphere, it would be proper to provide all public rooms with a competent number of conic ventilators, of the description above mentioned, as a late invention of a Gentleman in France.

Strictly speaking, we ought not to sit in the room where we dine, or take victuals, until it be aired again: those who can afford this luxury, should be careful not to stay for hours together over their bottle in the dining-room: the bad effects of such contaminated air are not perceived by the persons continuing their libations after dinner, but
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are very sensibly felt by any one coming in from the fresh air.

It is no less unhealthy to sleep in a room where a quantity of *green fruit* is kept, a circumstance not attended to in country places, and particularly by those who deal in fruit. From its fragrance a portion of inflammable matter transpires, which soon impregnates the air. Hence females of delicate habits have been known to faint, in approaching places where a few quinces were kept. For the same reason store-rooms and butteries are extremely unwholesome, if provisions of all kinds, animal as well as vegetable, are kept in them; especially oil, candles, fat, flesh meat, whether raw, boiled, or roasted, pastry, and the like.

As the perspirable matter of the skin is deposited in it, *soiled linen* should never be suffered to remain any time in a bed room or sitting room.

If possible, we should not sit through the day in a room in which we have slept; as the bed-clothes, and particularly feather beds, very slowly part with the exhalations they have imbibed during the night; neither is it sufficient for purifying the air of the room, that it has been ever so well aired in the morning.

The vapour of *charcoal* produces, particularly in close apartments, dangerous and frequently fatal effects. It fills the atmosphere with sulphuric particles which may be inspired, but cannot be
expired

expired again:—they retard the motion of the blood-vessels, stagnate the blood itself, and penetrate into the head; produce an acute pain, vertigo, and torpor—hence the greatest precaution is necessary, where charcoal is used; as innumerable fatal accidents have happened from this source. Dyers, who employ it for drying their cloth upon frames, seldom fail to experience great injury to their health.

All employments, in which persons work among impure wool, oil, colours, and the like, are to a certain degree detrimental to health. Washing, ironing, dressing the hair with greasy curling irons, burning lamp-oil, frequent white-washing of the walls, all saturate the air of a room with hurtful, damp, and sulphuric vapours. From the change, which oil and candles in a state of combustion produce in the colour of a white wall and white curtains, we may infer, that this fetid steam must also penetrate into the human body, and if so, must materially affect it.

It further deserves to be remarked, that all damp vapours are prejudicial, although they should not in themselves have a tendency to corrupt the air. Hence the keeping of wet linen, or even wet clothes, umbrellas, and the like, in dwelling-rooms, should by all means be avoided. Mechanics and others who are obliged to dry wet things in their strongly-heated apartments—joiners, turners, potters, bookbinders, &c. are particularly liable to swellings, and other disagreeable affections in the relaxed vessels of absorption.

Of

Of Heat and Cold.

As observation and experience inform us, that immoderate heat relaxes the body, overheats the blood, and exsiccates or consumes the other fluids; and that the people who live in temperate regions are more hardy and vigorous, and attain to a greater age, than the inhabitants of southern countries; it follows from these premises, that we ought not to enervate the human body by keeping it immoderately warm, by dressing it with a superfluity of clothes, by plunging it unnecessarily into hot baths, by using too strong fires in temperate weather, and least of all by sleeping in warm rooms, and perhaps on the most heating of all substances, feather beds. The temperature of a sitting-room should not exceed 60° of Fahrenheit's thermometer; that of a bed-room may be about 50° , as the medium temperature of our climate is between 50 and 55° .

Though man possesses the capacity of inuring himself to a very great degree of heat as well as of cold, yet sudden changes can be supported only by a few of very hardened constitutions. The gradual changes of the seasons prepare us in the safest manner to sustain all the alternations of cold and hot weather. It is therefore an error, and of no small consequence in the modern system of education, that we generally wish to habituate our children to the support of cold weather only. Persons

sons who cannot bear the heat of the sun, or strongly-heated rooms, are from their excessive delicacy frequently exposed to the most violent, nay to mortal accidents. Hence, in this respect also, children ought to be slowly and gradually accustomed to the inconveniences of the latter kind, which indeed occur as frequently, and are more dangerous, than those arising from sudden transitions to a colder temperature. For, the effects of the latter may, in a great measure, be obviated by exercise and muscular action.

In the sultry days of summer, we should be particularly on our guard against violently overheating the body;—in autumn, we should not dress too lightly, and in the mornings and evenings always somewhat warmer;—in short, we ought to avoid every thing that appears likely to check and repel perspiration. The baneful custom of accommodating our dress to the almanack and the fashion, rather than to the vicissitudes of the weather, in our inconstant climate, must necessarily be productive of many disagreeable consequences. Above all things, we ought to relinquish summer-dress pretty early in autumn, and to clothe ourselves gradually warmer, according to the variations of the weather. Yet after all, perhaps it would be most advisable to accustom ourselves to one kind of dress only for all seasons. The propriety of this custom, I shall more particularly consider in the fourth Chapter.

With

With respect to the proper time for heating the rooms in autumn, it has been supposed, that early fires are unwholesome and productive of frequent catarrhs. This assertion is certainly ill founded; for in warming the room, as well as in clothing the body, we should not so much be regulated by the particular time of the year, as the state of the weather, and the degrees of actual heat and cold: in attending to this circumstance, we cannot easily mistake. If in the temperate days of autumn, the room should feel colder than the external air, it is time to make a moderate fire: in damp and cold weather this is an useful precaution even in summer. Those who from caprice, parsimony, or prejudice would rather shiver on some weeks longer, than consult their sensations, often feel the consequence of a violent cold. The Dutch and German stoves certainly afford a more uniform heat in a room, though they might be considered not cheerful enough to an English company.

As we can neither breathe nor live without fresh air, it would be wrong in us to withdraw our bodies too much from the bracing effects of cold. In this respect, we should act conformably to nature, that is, in the same degree as the warmer weather changes to a colder state, we should gradually expose ourselves to the various changes of temperature. The cold will then neither feel unpleasant, nor impede the necessary perspiration; especially if we oppose it with vigour, and bodily exercise. We ought

ought also to take more solid sustenance in winter than in summer; because, by the longer continued motion or digestive process of the stomach, the circulation of the blood is accelerated, from which the natural heat of the body is produced. Nature herself dictates a compliance with this precept, as she has provided us with more substantial articles of food during the former season than the latter.

Lastly, as every sudden change of the weather, from heat to cold, and the reverse, is prejudicial to the body, we ought to guard against every circumstance, by which *perspiration* may be suddenly checked. Hence we never should remove from a strongly heated apartment into a fresh and cold air, unless we are provided with a warmer dress;—in the hot days, or after violent exercise, we must not frequent vaults, cellars, or ice-houses, undress immediately after overheating the body, nor take rest upon a damp soil or upon stones, nor bathe in cold water. Instant death has been often the consequence of such transgressions, or, what is still worse, they have brought on a painful and lingering species of consumption, which has hitherto baffled the united efforts of the faculty, and which annually makes dreadful havoc among people of a middle age. It is devoutly to be wished, that the experiments, now pursued with factitious airs or gases, may be the means of affording some remedy against this formidable destroyer of the human species, which cuts off incredible numbers

in the bloom of life, and shews no mercy to age, rank, nor sex.—And, as there is reason to believe, that a great proportion of consumptive cases originate from the sudden transitions above mentioned, no language can be strong enough to deprecate practices, as injudicious as they are destructive.



C H A P. III.

Of Cleanliness, and its various modifications, so far as it is immediately connected with the welfare of the Body;—the management of the Teeth;—the use of Baths, &c.

Of Cleanliness in general.

THIS domestic virtue ought to extend its influence to every object that is connected with the human frame; to the preparation and consumption of food and drink, to dress, dwelling, household furniture, and all our physical wants: in a word, cleanliness should not be confined merely to the interior domestic œconomy; it claims our attention to every place which we occupy, and wherein we breathe.

Let our clothes, linen, beds, covers, blankets and sheets be clean and dry; as all these substances absorb perspirable matter, and check the process of perspiration. Articles of dress which are soiled, and come into contact with the skin, being placed immediately over the pores, these reimbibe the humours already perspired, and return them to the body by the absorbents. Dirty linen will never attract the useless or noxious matter, which is secreted from

the blood, and ejected from the body; it remains on the pores of the skin, and is either again absorbed by the vessels, or clogs those emunctories which require always to be kept open. For a similar reason it is highly improper and dangerous to wear the clothes of sick persons, especially in contagious distempers.

Let the body, and particularly the joints, be frequently washed with pure water; especially in summer, when the perspirable matter, being of an unctuous clammy nature, obstructs the excretion by the pores.—The face, neck, and hands, being most exposed to the air, as well as to the impurities of dust and the like, ought to be daily washed, both morning and evening. Attention should also be paid to the ears, by cleaning them occasionally; so that the sense of hearing may not be impaired by an accumulation of wax, which from its acrid nature may prove unpleasant as well as injurious. The whole head ought to be frequently washed and cleaned, as it perspires very much, and is besides exposed to dust and other particles in the atmosphere, even though no powder be used upon the hair. Washing opens the pores, while the comb, by its close application to the skin, dissolves the viscid humours, and renders them fluid.

The mouth should be rinsed every morning, after dinner, and at night, with cold water; but in winter the chill should be taken off. The frequent washing of the mouth is otherwise necessary, because

cause the viscid slime, and small particles of food which settle about the interstices of the teeth, are very apt to putrify, and, if not removed, will infect the breath, and gradually injure the teeth themselves. Besides, this slime settles on the tongue, covers the papillæ by which food is tasted, and renders the palate less sensible.

It is scarcely necessary to observe, that the nose also should not be overlooked, as by neglecting to remove the secreted moisture in due time, the effects may become troublesome and detrimental to the organs of smell. In children, the nose ought to be occasionally washed; it having been found that the unpleasant smell peculiar to some infants is owing to the habitual neglect of cleaning that organ.

The tongue should be cleaned every morning, either with a small piece of whalebone, or with a sage leaf. These leaves are likewise useful for polishing the teeth. To clean the throat, we should gargle it with fresh water, and swallow a mouthful of water every morning—the drinking, however, must not be attempted too hastily; but, when we once accustom ourselves to this practice, we shall find it attended with advantage.

It is necessary, particularly in hot weather, to wash the feet frequently; as they perspire more, and are more exposed to dust than any other part of the body. The water should be warm, but not too much so, because hot water thus used relaxes

the fibres, drives the blood upwards, and occasions headaches. The proper degree of heat for young persons to wash in, is between 98 and 100° of Fahrenheit, and for the aged between 96 and 98, or somewhat more than milk-warm.

The removing of the beard and nails is no insignificant matter in the care of health. By shaving we promote perspiration.—Long nails, especially as they were in fashion some years ago, disfigure the hands, and prevent the feet from expanding properly: but the nails ought not to be cut too close, otherwise the toes will be obstructed in laying hold of the ground, and the fingers in feeling. They may also be easily wounded; and wounds under the nails are frequently attended with disagreeable consequences, on account of the many nerves running in that direction. Too long nails on the toes are apt to grow into the flesh, to become an obstacle in walking, and frequently to occasion considerable pain.

In *Eating* and *Drinking* too, or rather in the vessels used for preparing food and drink, we ought to pay proper attention to cleanliness. Every particle of filth introduced into the stomach may prove hurtful to it, to the other intestines, to the blood, and consequently to the whole body. For the same reason it is not only indelicate, but also unwholesome to dine, or take any victuals, in places where an offensive smell prevails.

On the management of the Teeth.

The principal requisite for the preservation of the teeth is, never to retire to rest without having cleaned them. Thus, the viscous matter of food, collected during the day, cannot corrupt the teeth in the night. The toothach, now so common, is indeed frequently owing to a hollow state of the teeth; but still oftener it originates in a want of cleanliness. The cleaning of the teeth, however, requires precaution. What is called Tartar of the Teeth, is of a corrosive nature, and should be removed with the greatest care. The manner in which itinerant Dentists usually treat the teeth, as well as their powders, tinctures, and other dentifrices, however highly puffed off and strongly recommended, are obviously pernicious. They deprive the teeth of their enamel, make them loose, and spoil the gums. The various dentifrices, whether *Royal* or *Imperial*, advertised in the public papers, are at least of doubtful, if not injurious effect; and it is an astonishing instance of credulity and infatuation, that people will take *medicines upon trust*, when they would hesitate to take any *food*, with which they are unacquainted.

If there be too much tartar, so that it adheres like a cement between two teeth, its being incautiously removed will deprive the teeth of the tartarous cohesion, and consequently of their sup-

port; and from the constant contact of the tongue, lips, and food, they will be shaken and loosened. The same will happen, should the tartar be allowed to eat away the gum from the root of the tooth. If in this case the foundation of the tooth be injured, such a tooth will necessarily be rendered loose: the gums will no longer be able to keep a tooth, which is deprived of its intermediate cement.

The tartar therefore must not be broken, all at once, with iron or glass instruments: but may be gradually scraped away with a blunt or broad cut quill, or some similar substance, from which the enamel of the teeth will suffer no injury. Most kinds of dissolvent drops, especially those sold as specifics for whitening the teeth, are made up of vitriolic acid, diluted with some distilled waters—They are of no service; on the contrary, they remove the enamel with the tartar, and thus spoil the teeth for ever. The common tooth-brushes are liable to the same objection.

To prevent the tartar from settling on the teeth, they ought to be kept clean, by washing them every morning and evening. Certain articles of food and drink should likewise be mentioned, as having a tendency to produce and accumulate the tartar—such are all viscous and saline substances, as salted and smoked meat, cheese, roasted eggs, the flesh of tame and wild animals kept too long for the sake of making it more tender and palatable, truffles,
and

and all species of mushrooms; beans, peas, chestnuts, vinegar, tart wines, and all kinds of acid fruit.

An equally safe, and as effectual an expedient, for removing the tartar is, to cover the teeth with a fine powder of *Gum Tragacanth*, or with soft wax, and thus to extract the tartar at once, together with this covering.

Although it does not enter into the plan of this work, to treat of the various diseases to which the teeth are subject, or to describe the different methods pursued in curing them; yet I judge it necessary to point out some of the most simple and approved remedies in that very painful affection, the toothach. If this complaint proceed from a hollow and carious tooth, some soft extract of the Peruvian Bark may be placed in the cavity of the tooth; if this should not remove the pain, a few drops of *Cajeput oil* upon cotton may be applied to the hollow tooth, or it may be rubbed externally upon the painful side of the cheek. THUNBERG, the Swedish Traveller, introduced the use of *Cajeput oil* into Europe, having often witnessed its powerful and almost instantaneous effects in the East Indies, where it is the last and only comfort of gouty and rheumatic sufferers. *Dr. Richter*, an eminent Physician of Göttingen, informs us that he has frequently relieved the most violent toothach, by applying externally the essence of *pimpinella*, or Burnet-saxifrage, with an equal quantity
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of laudanum, adding to it a drop or two of the essential oil of cloves. Though external remedies are not likely to effect a radical cure of this malady, yet in urgent cases they may be safely resorted to, especially if gently applied, so as not to injure the skin of the face; and they may often produce a temporary relief. If, however, the toothach proceed from *no local* cause; if, for instance, it be owing to a corrupted stomach, to catarrhal, rheumatic, hysteric, venereal, or other affections; all the specifics ever discovered cannot remove the pain, until the cause also be removed, in whole or in part. In my own practice, I have found the oil of Savin, or Juniper oil, preferable to opium, in applying it to a hollow tooth; the latter is at best an uncertain internal remedy, unless the body be prepared for it by the use of cathartics, or other suitable medicines.

In scorbutic affections of the teeth and gums, a vegetable diet, consisting chiefly of ripe fruit, and mucilaginous vegetables, will be found the best correctives. Beside these, a fine powder, made of three parts of double-refined sugar, and one part of burnt alum, may be employed with advantage for the purpose of rubbing them. Sugar is an excellent antiseptic; and IMBERT DE LONNES, a French Physician, reports, that a whole ship's company was once cured of an alarming scurvy, by living for some time, from necessity, upon sugar alone.—We should also consider the connection subsisting between

tween the teeth and the stomach; if the former be unequal to the purposes of mastication, the digestive powers will be gradually impaired, and the soundest stomach corrupted. To neglect the teeth, therefore, is to neglect the stomach; and if this be weakened, the whole mass of the fluids, and particularly the blood, will ultimately be tainted with crude, unassimilated, and acrimonious humours.

To dissolve and wash away the superfluous, slimy, and unctuous matters which produce the tartar, fresh water is sufficient, though it may be rendered a little more acrid by the admixture of a small quantity of common salt. Acids and alkalies, so frequently employed as dentifrices, are of too corrosive a nature; and the alkalies in particular injure the gums, perhaps the substance of the teeth themselves, while the acids deprive them of their enamel, and thus occasion a speedy corruption and gangrene within.

The most simple dentifrice is a crust of bread hard toasted, and reduced to a fine powder. This is fully calculated to absorb the viscid, oleaginous particles, and to remove the stony or tartarous matter. The bread, however, should not be roasted too black, as in that case it would evolve an acrid alkaline salt, which might prove hurtful. A still better dentifrice is a moderately fine powder of the Peruvian Bark, particularly of the genuine red species, which strengthens the gums, without inflaming them.

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In cleaning the teeth we ought not to make use of brushes or sponges, but of the finger, which being provided with the finest papillary vessels, is a much better and more proper instrument, and precludes the necessity of resorting to artificial means. Besides, the finger has the advantage of being soft and pliable, and of feeling any immoderate pressure too sensibly, to permit us to do injury to the teeth or gums:—hence, it is an ill-understood delicacy alone, which can prevent us from making use of it, instead of even the best Parisian tooth-brushes.

For cleaning the interstices between the teeth, we should not employ pins or needles, whether made of gold, silver, or steel; for all metallic substances are apt to canker the teeth. If toothpicks be at all advisable, they should be made of soft wood, or quills cut in a blunt point. In my own opinion, none should be used; for, of whatever materials they are made, they open, loosen, and injure the teeth, by making room for the tartar and other matters, to prey upon the teeth and gums. To answer every purpose of toothpicks, a thick and soft cotton cloth should be used, to rub the teeth over gently after every meal: but if people have once accustomed themselves to regularly picking their teeth, then indeed the cotton frictions may perhaps be too late.

Lastly, the cleaning and brushing of the teeth, however useful and necessary, is insufficient to pre-

vent the settling of the tartar, and the consequent injury to the teeth; for the source of both evils does not exist in the mouth, but really proceeds from the stomach, and a corrupted state of the fluids. Hence, the medical treatment of the teeth requires a particular regimen and diet, according to the individual case of every patient.

Of the use of Baths.

This important branch of dietetics is of excellent use and efficacy, both in the cure and prevention of diseases. Though the ancients could less dispense with the use of the bath, on account of the frequency of their athletic exercises, as well as from the want of linen, which was then much less in common use than at present; yet in our times too, it would be of great service, if the use of baths were more general and frequent; and that this beneficial practice should not be confined to particular places or seasons, as a mere matter of fashion. Considered as a species of universal domestic remedy, as one which forms the basis of cleanliness, bathing, in its different forms, may be pronounced one of the most extensive and beneficial restorers of health and vigour. I am not so sanguine however in my expectations, as to think that the cure of all maladies and diseases may be effected by the bath, as was lately promised by a noted empyric in this country, who
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most sagaciously impregnated his vapour baths with the collective produce of the vegetable kingdom. Such a general remedy is just as chimerical as that of the most famous panaceas, the tincture of gold not excepted.

Bathing, whether in warm or cold water, produces the most salutary effect on the absorbent vessels; which would otherwise reconduct the impurities of the skin through the pores, to the no small injury of health. To those in a perfect state of vigour, the frequent use of the bath is less necessary than to the infirm; as the healthy possess a greater power to resist impurities, by means of their unimpaired perspiration, the elasticity of their minute vessels, and the due consistence of their circulating fluids. The case is very different with the infirm, the delicate, and the aged. In these, the slowness of circulation, the viscosity or clamminess of their fluids, the constant efforts of nature to propel the impurities towards the skin, combine to render the frequent washing of their bodies an essential requisite to their physical existence.

Baths, considered as the means of curing diseases and restoring health, if judiciously applied, are likewise, more than any other remedy, of peculiar and singular advantage. Though, in this respect, they do not properly make a part of a regular system of dietetics, yet I shall request the indulgence of the reader, while I make a few
necessary

necessary remarks relative to the proper application of the bath, it being so frequently used as a mere dietetic remedy. Much depends on a true and accurate knowledge of the properties and effects of the different baths. I shall therefore divide them into two principal classes, the *warm* and the *cold* bath.

The *warm*, that is, the tepid or lukewarm bath, being about the temperature of the blood, between 96 and 98° of Fahrenheit, has usually been considered as apt to weaken and relax the body; but this is certainly an ill-founded notion. It is then only, when its heat exceeds that of the human body, (as in the *Hot Bath* and *King's Bath* at BATH, both of which are from 18 to 20 degrees higher than blood heat,) that the warm bath can produce a debilitating effect. It is in particular cases indeed, and under the immediate advice of the physician, that baths of the above immoderate heat ought to be used in their natural state, that is, without reducing their temperature by cold water. On the contrary, the lukewarm or tepid bath, from 98 downwards to 85, is always safe; and is so far from relaxing the tone of the solids, that we may justly consider it as one of the most powerful and universal restoratives we are acquainted with. Instead of heating the body, it has a cooling effect; it diminishes the quickness of the pulse, and reduces it in a greater proportion, according as the pulse has been more quick and unnatural, and according to
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the length of time this bath is continued. Hence, the tepid baths are of eminent service where the body has been overheated, from whatever cause, whether after fatigue from travelling, or severe bodily exercise, or after violent exertion and perturbation of mind; as they allay the tempestuous and irregular movements in the body, and of consequence strengthen the system in the strictest sense. By their softening, moistening, and tumifying power, they greatly contribute to the formation and growth of the body of young persons. Thus they are of singular benefit to those, in whom we perceive a tendency to arrive too early at the consistence of a settled age; so that the warm bath is particularly adapted to prolong the state of youth, and to retard for some time the approach of full manhood. This effect the tepid baths produce in a manner exactly alike, in the coldest as well as in the hottest climates.

From what has been advanced, it will not be difficult to discover, to what particular disorders the tepid bath may be of the greatest service, and the reason why they prove so eminently useful (particularly in a parched and rough state of the skin) in paralytic, spasmodic, bilious, consumptive, hypochondriac, hysteric, and insane cases, as well as in an acrimonious and corrupted state of the fluids, such as scorbutic and leprous eruptions, lues, &c. One obvious effect of the habitual use of the bath, particularly the tepid, is the softening
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and renewing of the external integuments of the body. It considerably increases the outward pressure on the body; hence breathing, particularly on entering the bath, frequently feels somewhat difficult, until the muscles have by practice become inured to a greater degree of resistance. Yet this effect, which in most instances is of small importance, requires the greatest precaution in some particular cases, so far as to prevent the use of the bath altogether; such, for instance, where there is danger of lacerating the internal vessels, when apoplexy, asthma, and the like is apprehended.

These few hints will be sufficient to determine the cases, in which the lukewarm bath may be resorted to with safety and advantage, as a *dietetical* remedy. Its application in the treatment of diseases, is foreign to the object of this Chapter, and demands the most minute inquiry into the nature of the cases which admit the use of it, as it is of itself a potent remedy which, in improper cases, may on that very account produce a contrary effect.

Bathing in rivers, as well as in the sea, is effectual for every purpose of cleaning the body; it washes away impurities from the surface, opens the cutaneous vessels for a due perspiration, and increases the activity of the circulation of the blood. For these reasons, it cannot be too much recommended, not only to the infirm and debilitated, under certain

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restrictions,

restrictions, but likewise to the healthy. The apprehension of bad consequences from the coldness of the water, is in reality ill-founded; for, besides that it produces a strengthening effect, by its astringent property, the cold sensation of itself is not easily hurtful. The same precaution, however, is requisite in the use of the cold as in the tepid bath; for after having overheated the body, especially in the hot days of summer, it may prove instantly fatal, by inducing a state of apoplexy. Hence the plethoric, or such as are of full habit, the asthmatic, and all those who perceive a great determination of the blood to the head, should be very circumspect in the use of it. For, although the consequence may not prove immediately fatal, yet the too great strain and pressure may easily burst some of the smaller blood-vessels in the head or breast, and thereby lay the foundation of an incurable disorder.—To such as are of a sound and robust constitution, bathing may be rendered an agreeable exercise by swimming against the stream, as, the fibres and vessels being obliged to resist the power of the undulating waves: the nerves are thereby excited into action.

Before I proceed to lay down dietetical rules for the use of the bath, I shall premise a brief historical narrative of this excellent practice, and explain generally its leading effects.

Among the Greeks, and particularly the Spartans, bathing was not entrusted to the caprice of individuals,

dividuals, but was considered as a public institution, being governed and arranged agreeably to the express laws of the State.—We learn also from sacred history, that among the Jews, at a much earlier period, persons under certain circumstances were pronounced unclean, and consequently unfit to hold any intercourse or communion with others, until they had performed the appointed ablutions. The Greeks, according to their own historians, learnt this practice from the Egyptians, and the Romans from the Greeks. With those celebrated nations, public and private baths formed an important branch of useful and ornamental architecture. Many opulent individuals courted the favour of the people, by lavishing their treasures in the establishment and decoration of public baths; and to this day we frequently discover the valuable remains of those national edifices. Among the Romans, the baths were in time converted into regular and luxurious dwelling-places, in which the youth of the patricians and of the wealthy were educated; a circumstance sufficiently ascertained in the life of CHARLEMAGNE, one of the greatest characters in either the German or Roman history.

The changes, which the contact of cold water produces on the body, naturally lead us to inquire into the physical nature and properties of the cold bath. The lightest water is at least 800 times heavier than air, from which it has been concluded,

that the former presses upon the human body with a force proportionally great. If therefore the column of air, which presses upon our body with a force equal to 39,900 lb. could be converted into water, the whole weight of that pressure would amount to 31,920,000 lb. Yet, as our health is already affected by a difference in the pressure of the air, occasionally varying from 3 to 4000 lb., we may easily understand, that the human body is not calculated to sustain so great a pressure for any length of time. Hence the most experienced negro-divers dare not venture beyond a certain depth of the sea; well knowing, it would be impossible to rise up against the additional weight of water incumbent upon their bodies.

The *properties* of the *Cold Bath*, in general, consist in its power of contracting the solid parts, and of inspissating the fluids. Any part of the body, which is exposed to the sudden contact of cold water, experiences at the same instant a degree of tension and contraction; it becomes narrower and smaller. Not only the blood-vessels, but likewise the small capillary tubes, are liable to this contraction and subsequent relaxation. What is vulgarly called the *goose-skin*, is nothing else but an exertion of the cutaneous fibres, a contraction of the orifices of the absorbent and exhalant vessels, occasioned by mental perturbation, spasms, or the effect of cold.—Hence it happens, that by the cold bath all the blood-vessels

vessels of the skin, and of the muscles in immediate contact with it, are so constricted and diminished, that at the time of this violent exertion they are unable to receive the usual quantity of blood. The smaller vessels of the skin are likewise closed; they press upon the humours contained in them, so that all perspiration necessarily ceases during this pressure. Thus all the fibres of the skin and muscles are brought into close contact; and if the humours contained in these tubes had no other outlets, by which to discharge themselves, they would become thick or inspissated, and lose their natural warmth. Were this inspissation of the fluids really to take place, it would be attended with dangerous stagnations and obstructions. That it does not, however, produce these fatal effects, may be ascribed to the following cause. As soon as the pressure is made against the external vessels, the blood retreats from them, in search of places where it may find less resistance. Such receptacles are all the great vessels within the body, into which the blood now enters, so that the principal arteries, and the veins of the intestines, are filled, extended and enlarged, and the blood rises to the heart. Although the effect consequent to the cold bath, may be considered as altogether mechanical, yet this simple operation is frequently productive of the most important and beneficial consequences.

All other strengthening remedies, in general, operate only on the fluid parts of the body ; they require to be previously dissolved by the fluids, blended with the mass of blood, and thereby conducted to the solid parts. The cold bath, on the contrary, acts almost instantaneously on the solid parts themselves ; and it has already produced its bracing effect, before a single drop of blood has been commuted. From which remedy, therefore, is it most likely we should derive the desired effect, that which immediately answers the purpose, or that which must pass through so many canals, and undergo so many changes, before it arrives at the place where it is to exert its efficacy ?—The sudden changes arising from the application of the cold bath, contribute in various ways to brace the human body. The relaxed fibres of the skin and the muscles, acquire more solidity and compactness from contraction. Their elasticity is increased, and thus a considerable defect removed ; the nerves are stimulated and incited to more powerful exertions, on which the ease, vigour, and habitual sprightliness of the body so much depend. From that degree of irritability which the nerves possess when in a debilitated state, there arise all the hysteric, spasmodic, and convulsive symptoms and affections. These may be mitigated or removed by the cold bath ; because it greatly affects and alters the state of the nerves ; it shakes and
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animates them, and by its forcible operation overcomes their tendency to preternatural rigidity and other disagreeable sensations. Here then we have two causes, which illustrate the excellent effects of this remedy;—there remains, however, a third more important and powerful, yet to be explained.

The blood, which by external pressure is driven into the internal vessels, extends and enlarges them, without diminishing that contractile force or tendency which is peculiar to every artery. At the moment when the external pressure ceases, all the internal vessels exert their powers of self-contraction, more forcibly than usual, as they are more strongly extended, and consequently enabled to exercise a greater force. The blood returned to the cutaneous and muscular vessels, finds its reservoirs contracted and invigorated; it flows through muscles, the fibres of which have acquired greater elasticity and power of resistance. It is accelerated in its new motion by these improved fibres and veins, and the result of the collective powers is a fresh impulse and rapidity given to its circulation. Although, at the first immersion, the uniform course of it is somewhat interrupted, this temporary retardation serves afterwards to re-establish and promote it. The blood now can penetrate with ease into the smallest capillary vessels; it can circulate freely through every part of

the animal machine, without affecting or relaxing the solids*.

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* Such are the advantages which the theory of bathing holds out in general. I shall, however, quote here a respectable authority, which may be of use to remove some erroneous notions hitherto very prevalent, in the practice of cold-bathing.

“ In the earlier stages of exercise (says Dr. CURRIE of *Liverpool*) “ before profuse perspiration has dissipated the
“ heat, and fatigue debilitated the living power, nothing
“ is more safe, according to my experience, than the cold
“ bath. This is so true, that I have for some years con-
“ stantly directed infirm persons to use such a degree of ex-
“ ercise, before immersion, as may produce some increased
“ action of the vascular system with some increase of heat,
“ and thus secure a force of reaction under the shock, which
“ otherwise might not always take place. The popular
“ opinion, that it is safest to go perfectly cool into the water,
“ is founded on erroneous notions, and sometimes produc-
“ tive of injurious consequences. Thus persons heated and
“ beginning to perspire often think it necessary to wait on
“ the edge of the bath, until they are perfectly cooled, and
“ then plunging into the water, feel a sudden chilliness that
“ is alarming and dangerous. In such cases the injury is
“ generally imputed to going into the water too warm,
“ whereas in truth it arises from going in too cold.

“ But though it be perfectly safe to go into the cold bath
“ in the earlier stages of exercise, nothing is more dangerous
“ than this practice, after exercise has produced profuse
“ perspiration, and terminated in languor and fatigue;
“ because in such circumstances the heat is not only sinking
“ rapidly, but the system parts more easily with the portion
“ that remains.

“ In his Essay on Swimming, FRANKLIN makes the fol-
“ lowing observation :—“ *During the great heats of summer,*
“ *there*

The healthy and the vigorous, who resort to the cold bath, on account of its cleansing and bracing effects, may continue in it for a considerable time with safety. But to strengthen and to give elasticity to the solid parts, every thing depends upon the sudden

“ *there is no danger in bathing, however warm we may be, in rivers which have been thoroughly warmed by the sun. But to throw ourselves into cold spring-water, when the body has been heated by exercise in the sun, is an imprudence which may prove fatal. I once knew an instance of four young men who, having worked at harvest in the heat of the day, with a view of refreshing themselves, plunged into a spring of cold water; two died on the spot, a third the next morning, and the fourth recovered with great difficulty* ” The authority of the American Bacon is of great weight in Medicine, as in every branch of science, and particularly in what respects immersion in water; for doubtless he spent more time in this element, than any philosopher of modern days. It may, however, be easily supposed, that he adopted the commonly-received opinion, that the injury arose from the persons in question going in *when hot*, instead of from going in *when cooling, after having been heated*; to which last circumstance it can hardly be doubted, that the fatal accident he relates was to be imputed.”

These remarks are worthy of the learned Dr. Currie;—at the same time, instead of advising any person to use the *cold bath* after exercise, I would certainly prefer the *tepid* or *lukewarm bath*; both on account of the greater safety attending the use of it, and because it possesses nearly all the advantages of the cold bath, without being liable to so many strong objections. Besides, the cold bath is altogether improper in a weak state of the lungs, in all complaints of the breast, in dropsies, in plethoric habits, and to very corpulent individuals; in all which cases the lukewarm bath may, if duly modified, produce effects highly beneficial.

sudden impression of the cold. This primary effect will be weakened or frustrated by remaining in the bath till the water feels warm, whereby the pressing or vibrating action on the nerves at length ceases. The most proper time of bathing is, when the stomach is not employed in digestion; as in the morning or forenoon, or from three to four hours after dinner.

The cold bath, between 65 and 32° of Fahrenheit, is not, strictly speaking, a dietetic remedy;—its effects are not so much calculated for the healthy and robust, as for the infirm and diseased, under particular circumstances. The external use of cold water is of singular benefit, when applied to individual parts of the body, where its use may be much longer continued without danger, and where we may accomplish the intended effects, in a manner by compulsion and perseverance.

Of all the parts of the body, the head receives most benefit from the affusion of cold water; this is a simple and effectual remedy against too great an impulse of the blood towards the head, where persons are threatened with apoplexy; in disorders of the brain and cranium; in wounds and other complaints, to which the head is subject. In these instances, its effects may be still farther improved by frigorific or cooling salts. The affusion of water upon the abdomen, has likewise been employed with great advantage, in cases of obstinate costiveness, affording almost instantaneous relief, when
internal

internal remedies have produced no effect. This should not, however, induce any person to use that remedy indiscriminately, or without proper advice.

On the contrary, in all those cases where the cold bath might repel certain eruptive humours, which nature determines towards the surface of the body, it cannot be resorted to without danger. Apoplexies have been the frequent consequences of an unwary use of the cold bath; more frequent, indeed, than is generally suspected. And yet the popular opinion is still prevalent, that there can be no better practice, than to plunge into the cold bath at all times, in order to strengthen the nerves. Children, in particular, are purposely accustomed to it from their infancy, to restore them to that degree of bodily vigour, for which our ancestors are so reputed. That many children, with the daily practice of bathing them in cold water, grow and remain healthy and strong, proves as little, as that many infants become vigorous and robust in the most unwholesome climates, and under the most unfavourable management.—Some think to fortify the body, by the use of the cold bath, against the vicissitudes of the weather; but it can be proved that children, who from their infancy have been bathed in cold water, are as much exposed to coughs and catarrhs, as those who have not been habituated to this violent practice, provided they have not been mismanaged by effeminating indulgence. In general, all artificial
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plans of hardening and bracing the bodies of children, are commendable only, when the child shows no strong and lasting aversion to them.

It should be considered that, as the cold bath powerfully contracts the fibres by its frequent use, it imparts to the juvenile body an unnatural degree of solidity and compactness, whereby it too early acquires the properties of an adult. The skin of such children as have been too frequently bathed, is generally much drier and harder than it ought to be at their age. It is a remark of GALEN, that the cold bath does not agree with a growing person, and he advises young people not to bathe at all, till the body be completely formed. Is it not inconsistent, that by cold-bathing we expect to bring the body of youth to the vigour of age, and that afterwards, when age approaches, we should wish to render it softer, and restore the energy of it, by lukewarm bathing? Hence the cold bath, for the purpose of strengthening children, must ever be considered as a doubtful remedy.

We now proceed to lay down some rules for the use of the cold bath, in the cases where it may be of service. 1st, Every cold bath applied to the whole body ought to be of short duration; all depends upon the first impression the cold makes on the skin and nerves, it being this impression which hardens us against the effects of rough and cold weather:—2d, The head should be always first wetted, either by immersion, or by pouring

water upon it, or the application of wet cloths, and then plunging over head into the bath:—3d, The immersion ought always to be sudden, not only because it is less felt than when we enter the bath slowly and timorously, but likewise because the effect of the first impression is uniform all over the body, and the blood in this manner is not driven from the lower to the upper parts. Hence the Shower Bath possesses great advantages, as it pours the water suddenly upon the whole body, and thus in the most perfect manner fulfils the three rules above specified:—4th, The due temperature of the cold bath can be ascertained only as relative to individual cases; as it extends from 33 to 56° of Fahrenheit, except in *partial* bathings, where, as has been already observed, the degree of cold may, and often ought to be, increased by ice, nitre, alum, salt, sal ammoniac, or other artificial means:—5th, Gentle exercise ought to precede the cold bath, to produce some reaction of the vascular system in entering into it; for neither complete rest nor violent exercise are proper, previous to the use of this remedy:—6th, The morning or forenoon is the most proper time for cold-bathing, unless it be in a river, in which the afternoon or towards the evening, when the water has been warmed by the sun, and the dinner has been digested, is the most eligible period of the day: a light breakfast will not be detrimental before using the bath:—7th,

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While in the water, we should not remain inactive, but move about, in order to promote the circulation of the blood from the centre of the body to the extremities :— 8th, After immersion, the whole body ought to be wiped, as quickly as possible, with a dry and somewhat rough cloth. Moderate exercise out of doors, if convenient, is proper, and indeed necessary.

To specify the various situations, in which the cold bath may be used with perfect safety and advantage, would lead me too far, and does not belong, strictly speaking, to the subject of this book. I shall, however, enumerate generally certain cases, in which we must absolutely refrain from the cold bath. 1. In a general plethora or full habit of body, and in the febrile disposition which attends it; in hemorrhagies or fluxes of blood, and in every kind of inflammation. 2. In constipations or obstructions of the abdominal intestines. 3. In diseases of the breast, difficult breathing, short and dry coughs. 4. In an acrimonious state of the fluids, bad colour of the face, difficult healing of the flesh, and the scurvy, properly so called. 5. In gouty and rheumatic paroxysms. 6. In cutaneous diseases. 7. In a state of pregnancy. And lastly, 8. In a deformed or ill-shaped state of the body, except in some particular cases to be determined by a physician.

The best method of cold bathing is in the sea or a river. Where, from necessity, it is done in the house,

house, I recommend the *Shower Bath*, for which a proper apparatus is to be had at the tin-smith's. Where the saving of expence is an object, it may be effectually supplied by the following easy expedient: Fill a common watering pan with cold water, let the patient sit down undressed upon a stool, which may be placed in a large tub; and let the hair, if not cut short, be spread over the shoulders as loosely as possible; then pour the water from the pan over the patient's head, face, neck, shoulders, and all parts of the body progressively down to the feet, till the whole has been thoroughly wetted. Now let the patient be rubbed dry, and take gentle exercise, as has been already recommended, until the sensation of cold be succeeded by a gentle glow all over him. When we first resort to this kind of bath, it may be used gently and with water having some degree of warmth, so as not to make the shock too great; but as the patient becomes accustomed to it, the degree of cold may be increased, the water may be allowed to fall from a greater height, and the holes in the pan may be made larger, so as to make the shower heavier. A large sponge may, in some measure, be substituted for a watering-pan.

Although the Shower Bath does not cover the surface of the body so universally as the usual cold baths, this circumstance is rather favourable than otherwise: those parts, which the water has not touched, feel the impression by sympathy as much

as those in actual contact with it. Every drop of water becomes a partial cold bath in miniature, and thus a stronger impression is excited than in any other mode of bathing. The Shower Bath indeed, upon the whole, possesses superior advantages to all others. 1. The sudden contact of the water, which in the common bath is only momentary, may here be prolonged, repeated, and made slow or quick, or modified at pleasure. 2. The head and breast, which are exposed to some inconvenience and danger in the common bath, are here all at once secured by receiving the first shock of the water; the blood is consequently impelled to the lower parts of the body; and the patient finds no obstruction in breathing, or undulations of blood towards the head. 3. The heavy pressure on the body occasioned by the weight of the water, and the free circulation of the blood in the parts touched by it, being for some time at least interrupted, make the usual way of bathing often more detrimental than useful. The Shower Bath, on the contrary, descends in single drops, which are at once more stimulating and less unpleasant than the immersion into cold water, and it can be readier procured, and more easily modified and adapted to the circumstances of the patient.

I shall conclude this Chapter with some account of what is called the *Aërial* or *Air Bath*. This is a late invention, the effects of which have not yet been sufficiently ascertained. Experience informs

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us, that by exposing the naked body for a short time to an agreeably cool, nay to a cold air, we perceive effects somewhat similar to those produced by the cold bath; particularly that of a pleasant sensation of heat diffused over the whole body, after having again dressed. There is little danger of catching cold upon this occasion; for in a place where we already feel a certain degree of cold in our usual dress, the sensation of cold will not be much increased, if we undress altogether. It may also be remarked, that with the *whole* body naked we have much less to apprehend from the effects of cold, than by exposing or keeping one part of it less covered than another*.

This species of bath then, certainly deserves farther trials. A spacious apartment with open windows may serve every purpose of moving in the free air. And here I may recommend to all who are engaged in sedentary and literary pursuits, to
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* *Lord Monboddo*, a well-known literary character, who has now almost reached his 90th year, till very lately accustomed himself to take strong exercise, when quite undressed, and in the open air. He also anointed his body, like the ancients, with aromatic oils, especially in certain states of the atmosphere: in the severest weather he never would enter a carriage, which he looked upon as an unjustifiable effeminaey; but he annually rode between Edinburgh and London, and took other long journies on horseback. And this venerable judge and amiable man found himself, long after the age of 70, as hale, and, in many respects, as vigorous, as he had been at 30 or 40.

walk with their heads uncovered in an open, and even in the coldest air, as being a simple and excellent means to strengthen the head, and to remove those complaints which arise from intense thought and close mental application.

To rub the body with woollen cloths, or with soft brushes, is of great advantage, by gently stimulating the fibres, increasing the circulation of the fluids to the external parts, and promoting a free perspiration, together with all other evacuations of the body. Persons of a delicate habit, of a sedentary life, and those who are liable to startings of the tendons, cramps, and lameness, may effectually relieve, or rather prevent these complaints, by causing the whole body, particularly the limbs, to be rubbed every morning and evening, for about half an hour, with rough cloths or soft brushes, till the skin becomes red. This friction is still more indispensable to the aged than to the young; and it may in a great measure produce the salutary effects of bodily exercise.

Frequent cutting the hair is of advantage to the eyes, the ears, and to the whole body. So the daily washing of the head with cold water, is an excellent remedy against periodical headaches. In coryzas, or defluxions of the humours from the head, in weak eyes and the like, the shaving of the head not rarely affords immediate relief; while at the same time it opens the pores and promotes perspiration. It is altogether a mistaken idea,
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that there is a danger of catching cold from the practice of washing the head or leaving it exposed to the free air, after having been washed. Those who condemn the washing of the head, deserve no attention; for the more frequently the surface is cleansed of scurvy and scaly impurities, the more easy and comfortable we feel. The oftener the hair is cut, the more quickly it grows again; and this easy operation supplies the place of a constant blister or artificial issue*.

Friction of the soles of the feet is very advantageous; but, on account of the great number of highly sensible nerves in these parts, such practice must not be carried to excess. A proper degree of warmth and perspiration in the feet, is always a favourable symptom of health. Besides, they should often be bathed in cold, or still better,
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* All secret compositions or pomatums for making the hair grow long and thick, are little better than fraud and imposition, and generally consist of noxious ingredients. In place of them, I recommend a simple mixture of olive-oil and spirits of rosemary; to which may be added a few drops of oil of nutmeg. With this mixture let the hair be anointed every night; but sparingly at first.

To change the hair to a darker colour, the liquid remedies sold by the perfumers are generally dangerous, as consisting of lead, antimony, and other metallic solutions. The only method to be pursued with impunity, is to cut the hair pretty close to the head, and comb it morning and evening with a leaden comb, which simple process cannot injure or check the perspiration of the head.

in lukewarm water, well rubbed, and the nails cautiously cut. There will then be no danger of the nails growing into the flesh, or of corns or other callosities arising in the feet. All the methods hitherto discovered of extracting corns afford only *temporary* ease; and it is very dangerous to cut them too deep, on account of the many nerves running in every direction of the toes. Easy shoes, frequent bathing the feet in lukewarm water, with a little salt and potashes dissolved in it, and a plaster made of equal parts of Gum Galbanum, Saffron, and Camphire, are the only remedies I can recommend against this troublesome complaint.



C H A P. IV.

Of Dress;—the advantages and disadvantages of the usual mode of Clothing considered, together with proposals for remedying its defects.

IN considering the various articles of Dress, attention must be paid both to its *substance* and *form*. Our mode of clothing may occasion trouble, disease, and death—1, when it attempts to improve some supposed defects of the body, which cannot be done without injury; and, 2, when it consists of improper substances, whether used from necessity, or for the sake of fashion and pleasing the fancy.

To avoid ridicule, we comply with the prevailing fashion of the day; but, if this compliance be prejudicial to health, it shows great weakness to allow ourselves to be carried away with the stream; and although a deviation from the mode, may for the moment excite the ridicule of the thoughtless, yet those who have the boldness to oppose the Tyrant Fashion, when its dictatorial mandates are injurious to health, will in the end triumph, and may themselves have the satisfaction to introduce dresses, at once healthful and elegant. Happily,

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in this respect, people begin in some degree to think for themselves; that rigid adherence to the mode does not now disgust us, which heretofore dressed both men and women, as much in uniform suits, as a regiment of soldiers.

The general properties of a good dress are the three following :—1, That it be not so hard and unpliant, as to obstruct the free and easy motion of the joints, and molest us, either by its weight or tightness.—2, That it preserve the body in that degree of temperature which is most agreeable, as well as most suitable to the different functions and motions in a healthy state ;—and, 3, That it do not produce any detrimental effects, so as to increase perspiration in an unnecessary degree, nor too much absorb the vapours of the atmosphere.

On the Materials used for articles of Dress.

The property of receiving, repelling, and emitting heat and cold, depends not only on the substance from which our dress is made, and its shape or form, but also on the colour. Clothes of a light colour have the least attraction for heat, and therefore are most proper in hot weather. Substances of a very smooth and shining surface, strongly reflect the rays of the sun, so that they cannot penetrate through them; hence the advantage in hot climates, of hats covered with wax cloth, particularly

cularly of a green or white colour, of smooth and shining shoes, glazed gowns, and the like. Dazzling colours are offensive, and he who suffers from weak eyes, will injure them still more by wearing crimson or scarlet himself, or being much in company with others thus dressed. For a similar reason splendid white dresses, steel buttons, gold and silver lace, and all ornaments of this sort, are detrimental to vision.

Animal wool produces a moderate warmth, on account of the stimulus and gentle friction it occasions on the skin. By its use, animal electricity is elicited, perspiration is promoted, the perspired humours are absorbed and again easily evaporated, on account of the less degree of compactness in this substance.

Linen Cloth, by diminishing the elasticity of the skin, increases the internal warmth, and at the same time, from its compactness, retains too much the perspirable humours, and does not part with them so readily as wool. Soiled shirts therefore produce a disagreeable cooling sensation, they stop perspiration more or less according to the degree of coarseness of the cloth, and as they are more rarely or frequently changed.

Silk occasions a gentle stimulus, but does not much increase perspiration, though it attracts less humidity from the atmosphere than linen.

Wax-cloth increases perspiration in an uncommon degree, but does not admit it to pass through

again, and is therefore applicable only in certain diseases.

Cotton stands in the middle between animal wool and linen; it increases warmth and perspiration, retains the latter to the injury of the wearer, on account of its compactness, and like wool readily attracts infectious matter.

All kinds of *Fur* are more noxious than useful, both with respect to their structure and constituent parts. They contain many alkaline and oily particles; they are generally too compact and unequal on the surface; they too much stimulate and increase perspiration, by promoting the access of humours to the skin; they do not allow the perspirable matter to escape, soon acquire an intolerable smell, and more than any other substance attract and retain contagious effluvia. Experience informs us, that nations who dress in fur, particularly in hot countries, are frequently exposed to diseases, owing to a want of cleanliness and free perspiration; such are the putrid fevers of Hungary, the plague among the Turks, the singular disease of the hair in Poland, called *plica polonica*, which furls the whole hair into a number of twists, that have the appearance of so many greasy strings, and afford a ghastly spectacle.

We ought, therefore, to choose a dress agreeable to the season and weather, as well as to the constitution of the body. Woollen clothes are the most proper in spring, autumn, and winter; because
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they moderately warm the body, and do not weaken it by the abstraction of too many exhalations, as they have fewer points of contact on the body, than any other materials of drefs.

In summer, most people are accustomed to wear thin clothes, which are scarcely proper in our changeable climate. It is not then advisable to take much exercise in thin dresses, particularly in the heat of the day. Nor should we venture to wear such clothes early in the morning, when the air is cool, and the pores of the skin have been enlarged by the warmth of the bed ;—but still less in the evening, when the heat of the day has so much opened them, that perspiration may be easily checked, and health materially injured.

In our changeable climate, it would be preferable to adopt a species of dress, which is nearly uniform in all seasons ; for, it is nothing but fancy, that thin clothes are cooling in summer ;—and since they are more immediately pervaded by heat during the least exercise, it certainly would be very prudent and rational, to wear a dress that is calculated to withstand the effects both of cold and heat. That there is no danger in adopting a general dress for all seasons ; on the contrary, that it is the most beneficial plan of managing the body, with regard to the most important function, namely that of perspiration, I shall endeavour to prove in the next Section.

On the immediate Covering of the Skin.

The first and principal rule with respect to this subject is, that *the covering of the skin ought to be always the same, and not be changed according to the season and the weather.* The usual consequence of this change is, in the first place, an uneasy and painful sensation. A skin accustomed to fine linen, cannot even bear the feel of coarser; and cotton is still more disagreeable to it, but, most of all, animal wool or flannel. In the next place, to change the dress according to the weather, occupies more time, and requires more expence, than is convenient to the great body of the people.

Nevertheless, there are many who, from mistaken maxims of health, accommodate the covering of their skins to the seasons: they dress themselves in winter in flannel, towards spring and autumn in cotton, and in summer in linen: this method is as absurd as it is dangerous. Notwithstanding the difficulties, which each of these changes must produce, while we undergo this new trial on our skin, we expose ourselves at the same time, in every such change, to all possible dangers arising from cold and a repelled perspiration. This custom is the more dangerous, as it is usually practised by the infirm, the tender, and the aged, who regulate themselves less by the temperature of the weather, than by the days of the almanack, on which they are periodically accustomed to change their dresses.

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The question then, which is the *most proper covering of the skin*, is easily answered. *Animal wool* seems to recommend itself to us by the very circumstance, that hair is the general covering of those animals, which most resemble man in their structure. If men were habituated to go naked in the colder climates, the human body would, no doubt, also be covered with more and longer hair. Animals, in winter as well as in summer, have the same coat, save that in the coldest season their hair is uniformly somewhat thicker and longer, consequently also warmer than in summer, especially in the more northern countries.

Not only analogy, but experience likewise proves, that wool worn next the skin has indisputable advantages over all other substances. For, 1, Flannel is but a slow conductor of *external* heat to the body, and it attracts the more easily *internal* heat, and allows it to evaporate the more readily, as it is possessed of greater porosity than any other texture. 2, A sultry atmosphere is extremely troublesome, particularly where great heat is combined with moisture, the humidity checking the perspiration, and at the same time conducting too many aqueous particles to the absorbent vessels from without. Here then flannel is of incomparable service, since it keeps the vessels of the skin constantly open, makes them perspire freely, and admits but a very small degree of external moisture.

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The principal good effect of flannel, however, consists in the gentle and beneficial stimulus, or that friction which it occasions on the skin, and by which it opens the pores. We must not imagine, that flannel *of itself* heats more than linen or cotton; for it is not the heat which occasions inconvenience, but the circumstance of the perspirable matter adhering to the skin. In flannel, we may perspire without danger, and undertake any exercise of the body, without disagreeable sensations; not so, when linen remains wet on the skin. If we take violent exercise in flannel, perspiration is necessarily increased, but the perspired matter is communicated through the flannel to the atmosphere, and the skin remains dry, warm, and comfortable. If we take the same exercise in linen shirts, perspiration is indeed also increased, but the perspired matter is not imparted to the atmosphere, but is inspissated in a fluid state, clogs in the linen, and remains in contact with the skin.

Another advantage which flannel possesses over linen and cotton is this, that people perspiring profusely in flannel shirts, may safely venture into the open air, and will not easily catch cold, because flannel does not absorb the perspired humours. If we do the same in linen shirts, the skin will soon be wetted by perspiration, it will occasion a sense of coolness and shivering; in most cases a violent cold, and very frequently an inflammation of the lungs, will be the consequence. This danger arises
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from the fluid matter incrassated upon the skin; and we may be the more severely injured, if we at the same time expose ourselves to the action of the wind, or a current of air.

The praises bestowed upon flannel, by so many respectable authorities, by men who from long experience have ascertained its beneficial effects, render it a matter of surprise, that any individual, however great his reputation, should be whimsical or hardy enough to dispute matters of fact, merely with a view to establish a favourite hypothesis. Numberless writers, both ancient and modern, confirm the good effects of flannel next the skin: of these I shall only quote COUNT RUMFORD, who says, in one of his earlier Essays, that he is convinced of the utility of flannel shirts in all seasons; that he has worn them in all climates, in the warmest apartments, and in the most fatiguing exercise, without the least difficulty; that he was relieved, by the use of flannel, from a pain in his breast he had been frequently subject to, and never since knew an hour's illness; and that nothing exceeds the agreeable sensation of this dress, when people are once accustomed to it.

It has been objected, that flannel worn next the skin is debilitating, because it too much increases perspiration; but this is not founded on truth, since a free perspiration, *as long as the skin remains dry*, never can be hurtful, nor immoderate. Such mistaken notions have been propagated, from the
circumstance,

circumstance, that flannel is frequently ordered by physicians, to increase perspiration in some diseases, where this is necessary to the recovery of the patient: *but the copious perspiration is then the effect of the disease, and not of the flannel.*

The uneasy sensation occasioned by flannel is of very short duration. That it may make the skin red and inflamed, if it be too much rubbed and scratched, cannot be denied; but it is a palpable falsity, that it produces cutaneous eruptions. It has quite a contrary effect; it preserves the pores open, increases perspiration, and thus removes the cause of cutaneous diseases, which consist chiefly in a checked and irregular state of excretion by the pores.

In answer to another objection against the wearing of flannel, it is certain, that a flannel shirt or waistcoat may preserve the body as clean, and much cleaner, than linen, *if as frequently changed.*

Wool, on account of its rough surface, is more calculated to absorb infectious morbid matter, than a more smooth substance; but we have nothing to apprehend from flannel on the bare skin, and under the usual dress. I am rather of opinion, that it is a better preventive against contagion than any other; because, while it encourages perspiration, it at the same time removes the inhaled poisonous particles, particularly if, in cases of danger, perspiration be increased by other suitable means. Hence people wearing flannel on their skin,

skin, never suffer from cold. I have been informed, that the manufacturers in the different metal-refineries of Birmingham, as well as at the iron-works of Colebrook-Dale and Kettleby, in the most intense heat, wear no other but flannel shirts; and that without these it would be impossible to prevent continual colds, and the most fatal diseases. With this beneficent intention the British soldiers upon the Continent, some years ago, were furnished with flannel waistcoats, by the liberal subscriptions of individuals, which, I am convinced, saved many lives from the effects of a cold and moist climate.

These advantages strongly recommend the use of flannel to every one, who is anxious to preserve his health, particularly to those who are exposed to all kinds of weather, as country-people, fishermen, mariners, soldiers, and all travellers. As flannel is suitable to all seasons; as it requires no great changes in the under-dress; and as it is a tolerable substitute for a deficiency of upper dress; it deserves every attention among those who provide for orphan and poor-houses, as well as for the indigent of every description. Many desperate diseases in the legs of the lower people, many inflammations of the throat, breast, and lungs, might be prevented, and many lives saved, both of children and adults, if flannel were more generally worn. This would be a fashion, that could not be too universal.

People

People who complain of cold legs and feet, are never comfortable nor healthy : if they could be prevailed upon to wear worsted stockings and flannel drawers, they would acquire a quicker circulation of the blood in the lower extremities, and prevent many troubles and indispositions, from which, without this precaution, they cannot escape. Most valetudinarians and patients slight this advice, because they imagine that the wearing of flannel is attended with uneasy sensations. This, however, is not so considerable as to prevent them from giving it a fair trial ; for the uncomfortable feeling continues at most a few days only, as I have myself experienced ; and this trifling sacrifice cannot be compared with the salutary effects, which flannel next the skin uniformly produces. By continuing it sufficiently long, and having it frequently changed, the most obstinate gouty and rheumatic complaints have been removed, and many imminent dangers averted by its constant use. Children afflicted with rickets, cannot be better relieved than by a proper diet and flannel shirts, which may be daily fumigated with amber, petroleum, or any other balsamic oil ; a process, which has been frequently productive of the most beneficial effects.

Of Stockings.

Cotton stockings, which are generally worn at present, are highly objectionable. There is no part of the human body, which perspires so much

as the feet. The disagreeable sensation cold feet produce, is well known; for the connection between the feet and head, the stomach, the uterus, and many other important parts of the human system, is so intimate, that gout, suppression of the critical evacuations, pain in the excretory organs, nay cancer, inflammation of the uterus, and abortion, may be the consequence of cold feet and legs, with which the wearing of cotton and silk stockings is necessarily accompanied. Cotton and linen worn next the skin, if once filled with perspirable matter, do not admit any more to pass through them; a glutinous and cooling moisture accumulates, and it is not easy to keep the feet thoroughly clean in this dress. Those who alternately wear cotton and worsted stockings, must soon observe the difference in the exhalation and moisture peculiar to each. Cotton, though somewhat better than linen, is still much inferior to wool, which is, of all others, best calculated to absorb and to exhale the noxious moisture emitted by the pores.

The reciprocal effect of the perspiration of the feet, and of the leather of the shoes, is greater than is commonly believed. Hence those, who wear cotton stockings, ought, from respect to cleanliness, as well as health, to change them according as their exercise increases perspiration.

Although the feet are the principal sources or conductors of exhalation from the body, little

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attention

attention has been paid to them, with a view of promoting this salutary secretion. Instead of profiting by this hint of nature, mankind have been imprudently and unaccountably studious to stop that canal; imagining this to be the safest way of preserving the feet dry, and free from all disagreeable smell. Dry feet are certainly preferable to moist: but the means of promoting perspiration, are also the only means capable of keeping the feet dry, and free from any unpleasant fetor. It is equally improper and unhealthy to wear any other but woollen gloves. These ought to be worn by females, who wish to improve the skin of their hands and arms; no cosmetics or washes are so certain and so powerful in their effects: on the contrary, all external applications, unless assisted by internal remedies, are attended with the positive ruin of skin, bloom, and health.

Persons who have a great tendency to perspire in their feet, and who increase this exhalation by much walking or dancing, will no doubt be sensible of the contaminated parts of their cotton, thread, or silk stockings, which, instead of removing the exhaled matter, actually absorb it; bring it in contact with the skin; preserve it in a state of heat favourable to putrefaction; and check all further perspiration.

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That the feet are more exposed to the effects of cold, and to stagnations of the fluids, than any other part of the body, is unquestionable: 1st, because they are the most remote parts from the heart, and the quickness of the circulation of the blood also decreases in proportion to that distance; and 2d, the blood circulating downwards makes its way to the heart somewhat slower, on account of its own gravity. By this slowness in the circulation, more watery parts also are deposited by the blood. It is therefore necessary to keep the feet somewhat warmer than the rest of the body, to encourage the motion of the fluids to the upper parts. Woollen stockings are excellently adapted for that purpose, and they ought to be chosen rather thicker than those flannels used for shirts and drawers. For the same reason, it is judicious to prevent all moisture penetrating from without, by means of water-proof shoes, provided with thick cork soles for the winter, or with the lately contrived elastic soles of horse-hair.

The most disagreeable sensation produced by the feet in perspiring, is between the toes: this could be prevented only, by wearing stockings constructed with toes, like the fingers of gloves; because these alone could absorb and prevent the viscid and fetid particles from settling there. But as this proposal is not likely to meet with the approbation of the votaries of fashion, I shall substitute

stitute an easier method of remedying the unpleasant effects of violent perspiration in the feet. A powder of burnt alum is sufficient to overcome this fetor, by neutralising such acrid particles; and at the same time it will not in the least obstruct the necessary perspiration.

Of Dress, as to its Form.

All coverings of the head, of whatever materials, produce more mischief than good. The well-known and excellent rule, of keeping the head cool, and the feet warm, is too much neglected, especially by the lower classes of the people in many countries, as in Scotland, Holland, and Germany, and likewise among people of a certain age and description in this country. The Scotch peasant wears his heavy bonnet, the Dutchman his cap, and the Turk his turban, without considering that these are stupifying, and that they convert their heads into vapor-baths, while the feet are chilly. In all countries, the man who lives at his ease, carefully covers his head with a warm night-cap; he spends perhaps one half of the day in this unnatural dress, and prepares his head for frequent colds or catarrhs, at every sudden change in the atmosphere. Besides, weakness of the head, pains, eruptions, local plethora or fulness of blood, loss of the hair, lethargy, and at length stupor or
insanity

insanity are not rarely the effects of this imprudence*.

In this moderate climate, we might safely accustom our youth to go without any cover of the head; as nature has already provided it with hair for that purpose. In very cold and hot countries, however, the head must be slightly covered to shelter it from cold, or from the still more dangerous vertical rays of the sun.

It is an instance of improvement in the education of children in England, that their tender heads are not so much shut up in close caps, and fur-bonnets, as those upon the Continent. A practice so injudicious and hurtful, deserves no imitation; and yet there are advocates for *warm* night-caps and wigs; they would starve their feet, while the head is enclosed in an artificial stove, which enfeebles their mental faculties, and diminishes the vigour of the body.

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* For some years past, the ladies, instead of those horrid masses of frizled and clotted hair, which used at once to injure their health, and disfigure their faces, happily returned to beautiful and elegant nature, having their hair hanging down in graceful ringlets, while the only artificial covering was a simple turban, or an ornamental bandeau. Of late, however, this tasteful style of decoration has been succeeded by unnatural, disgusting, and unhealthful *wigs*; a fashion probably introduced by some ugly and bald woman, to reduce her gay and beautiful imitators to her own standard of deformity.

New-born children, and those who are most tender, require only an easy and moderately warm covering for the head, and this chiefly during the first weeks, on account of the softness of their cranium, then but imperfectly ossified. Yet such a cap must not be closely tied, that it may not press the head, nor cripple the muscles of the ears.

That the ear is naturally capable of some motion, is proved by the muscles with which it is provided. Its form, resembling a shell, is admirably adapted to receive and convey the sound. In the vain conceit, that a projecting ear, so as the author of nature has created it, is a deformity, nurses and over-wise matrons endeavour to press the child's ear, from its first appearance, close to the head. Thus they render the shell of the ear immoveable, and diminish the capacity of hearing. A properly expanded ear not only strengthens the acuteness of hearing, but it likewise preserves this useful sense to a great age, when the muscles of the internal organs of hearing become relaxed.

To go with the head uncovered, in sunshine, is certainly improper, both for children and adults; but our common black hats are ill calculated to avert the mischief, as they do not reflect the heat, but rather concentrate it in the most sensible manner upon the head. Much better would be hats of a white, or any other light colour, particularly for

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travellers,

travellers, soldiers, and labouring people in the fields, who ought to wear hats made of straw, wax-cloth, or any other light substance. In very hot weather, a piece of white paper may be fastened to advantage on the crown of the hat.

As the hat ought likewise to shelter the eyes from too vivid a light, the brim should be broad enough to protect them, and the inner side of it might be of a green or blue, but not of a black, nor a very light colour. From the present mode, however, it appears that both ladies and gentlemen think a brim almost, if not altogether unnecessary, even when the power of the sun is most oppressive.

People suffering from periodical headaches, or whose heads are otherwise unhealthy, should have their hair cut short. By this petty sacrifice, they will promote the necessary perspiration, the head will remain cool, and the cold bathing of it can be practised with more advantage. In this point of view, wigs cannot be *altogether* condemned, as long as hair-dressing, and artificial braids, and other ornaments, form an essential part of fashionable dress. Besides, the wearers of wigs are, in a great measure, exempt from many inconveniences and evils, attending the use of powder and pomatum. Lastly, if we must choose one of the two maladies of the times, it is most rational to adopt the least noxious to health: and in so far I think a *light wig* is justly preferable to a head enveloped

in an artificial paste of powder and pomatum. Those, however, who are once accustomed to wear a wig, should not upon any account again let their hair grow, in order to have it dressed, pasted, and powdered anew.

With respect to *Shirts*, the most proper substance having been before investigated, I shall only add, as to their form—that they may become seriously hurtful to health, if too narrow in the collar, and in the wristbands. I have seen several instances of people attacked with shortness of breath, and difficulty of speech, from this reason only, because the blood cannot circulate freely, if the neck and wrists be tied or buttoned up too closely. I was once an eye-witness, where a young man, playing at hand-ball, was suddenly seized with an apoplectic fit, the cause of which seemed at first inexplicable. As soon as his shirt-collar, wristbands, and garters were loosened, he instantly recovered.

Neck-cloths, cravats, ribands, and necklaces of all sorts, *when they are too tight*, stop the access and retreat of the blood, to and from the head, occasion accumulations of the blood and other fluids, headaches, faintings, stupor, apoplexy, corrosive ulcers of the skin, and innumerable other maladies. All coverings of the neck ought therefore to be constantly worn loose. People who are liable to sore throats, and diseases of the breast, might gradually accustom themselves, in mild and dry

dry weather, to go with their necks as slightly covered as possible, and if fashion would permit it, to have no other covering but the collar of the shirt. In cold and moist weather, a thin handkerchief might be added. But the modern cravats, filled with a stiffening of cotton or wool, are extremely injurious to the part they are intended to protect. For, by occasioning too great heat, they render the neck unnaturally sensible to every change of the atmosphere. It is rather surprising, that from a due sense of their perniciousness, we have rejected all coverings of the neck in children, as being troublesome and useless; and yet, in defiance of experience, we continue to incumber our own necks with such bandages.

Neck-laces and ribands, again, are generally tied so close, as to repress with violence that supposed deformity of the throat, vulgarly called the *Adam's apple*; though it projects less in the female than in the male sex. These ribands and neck-laces, if worn tight, are the more inconvenient and dangerous, if they be narrow and edged. Upon removing them, which is even frequently neglected at night, they discover a remarkable impression on the neck, clearly proving the impediment they are to a free muscular action, and what stagnations, troubles, and dangerous consequences they may occasion. The neck and throat, being alternately expanded and contracted, in speaking, chewing, and swallowing, it shows the highest degree of imprudence,

prudence, to obstruct its motion for the sake of appearance, vanity, or fashion.

Equally objectionable are those black stocks, that were formerly much in fashion, and are still worn by some old beaux, and military men. The latter indeed deserve our compassion, that they are obliged to wear these uncomfortable collars; but the former ought to consider, that they expose themselves to dangers increasing with the advancement of age, and rendering them every day more liable to apoplexy. I knew a regiment of soldiers on the Continent, whose Colonel was excessively fond of what he considered a martial appearance: he caused his officers and men to have every article of their uniform remarkably tight, particularly the stocks, waistbands, and knee-garters. The consequence was, that in the course of a few months above the half of his regiment became subject to very obstinate cutaneous diseases, and other obstructions, so that they were unable to perform duty. Other regiments in the vicinity suffered also, indeed, from this destructive custom, but the proportion of their disabled soldiers was like one to ten in the former*. The late Dr. FOTHERGIL asserts,

* Here, though in some measure out of place, I cannot avoid animadverting upon the singular custom, of obliging soldiers to wear loads of hair, plastered up with quantities of soap and flour; a custom incompatible with cleanliness, injurious to health, and attended with considerable trouble and expence. Were their hair cut short and powdered, so
that

asserts, that these tight stocks are productive of apoplexy, if a person looks for some time, with his head turned, without moving his body. By this alone, he believes, people have been subject to apoplectic symptoms. For, such a turn of the neck, when the body stands fixed, diminishes the diameter of the jugular veins so much, that a proportionate quantity of blood cannot return to them, from the vessels of the head and the brain.

Neck-cloths or cravats, loosely tied, and not too thick, are therefore the only proper ones for *Men*; but as to *Ladies* and *Children*, it cannot be disputed, that they would be better without any.

Laced Stays are indeed, among the better ranks of society, at present out of fashion; since the Grecian form is justly preferred to all artificial shapes. Yet, when we have adopted an useful habit ourselves, it is our duty to recommend it to those also, who are still following a destructive practice. And with this intention I cannot but reluctantly observe, that nine-tenths of the community still wear these oppressive *strait jackets*, merely because
their

that the powder could be easily combed out, and their heads daily washed, these inconveniences would be remedied, and the men have a degree of smartness, beyond what their present mode of hair-dressing gives. The immense and heavy Grenadier-caps are also a most exceptionable part of military dress, particularly on the little Drum-boys, some of whose caps I have seen literally of greater dimensions than their bodies.

their mothers and grandmothers have done the same. I shall therefore briefly state a few of the consequences, arising from this unnatural piece of female dress,—diseases of the breast, external callosities, and cancer itself; the ribs are compressed, the spine is bent out of its place, the free expansion of the lungs is prevented; hence shortness of breath, indurations and tubercles of the lungs, cramp of the stomach, defective digestion, nausea, irregularities in the secretory and other organs, and the like: in short, the list of the maladies thus produced is too long to be here detailed; and both married and unmarried ladies, for the sake of compassion, should exert all their influence, to persuade the common people of the injuries occasioned by stiff laced stays. If any such garment be at all admissible, it ought to consist of soft and pliable materials, such as fine chamois leather, the hatter's felt, or what is still better, the knitted and more elastic texture used for gloves and stockings.

All that has been said, with regard to laced stays, is also applicable to small waists, and tight coverings of the breast and the abdomen *.

Narrow

* Fashion delights in extremes. No sooner had the fair sex abandoned the unnatural and unhealthful custom of long taper waists, than they in a manner concealed the waist altogether. Instead of the cincture round the middle of the body, as nature and taste directed, they bound themselves

Narrow sleeves in gowns and coats, tight wristbands in shirts, and bracelets, occasion a swelling of the veins on the back of the hand, rigidity, weakness of nerves, and impotency of bending the arm. If the arms be in this manner twisted from their infancy, the growth and formation of them is impeded; and it is probably owing to this cause, that we see so many persons with short, thin, and ill-formed arms.

Women suffer much more by this bandage than men, whose arms possess more muscular strength, and have not the interstices of the muscles filled with fat, like in the arms of women. In this respect, the modern fashion of tying the sleeves of ladies gowns close to the elbow, deserves particular censure; as the circulation of the blood, together with a motion of the arms, is thus obstructed, and many disagreeable consequences wantonly induced. The female arm, further, is naturally somewhat fuller from the shoulder downwards, and again turns smaller towards the joints of the hand: but in man, it is always more muscular a little under the elbow. From this difference in the structure, it is obvious, that the sleeves in a female dress lie close to the whole arm, while those of a man's coat but partially attach to it.

Many

selves over the breasts, a custom not less preposterous and injurious to health, than the former fashion, of a close and painful compression of the lower part of the body.

Many of the remarks already suggested, respecting the form and substance of other parts of dress, are likewise applicable to the article of *breeches*. If they be made of improper materials, too tight or too strait in the waistband, they must occasion both uneasiness and injury to the body. Yet the ingenious observations, lately published on this subject by Dr. FAUST, an eminent physician in Germany, are by no means so conclusive, as to induce us to abandon an article of dress, not only rendered necessary by the laws of decorum, but which, when properly constructed, is even of considerable service; inasmuch as breeches, by their moderate pressure, tend to strengthen the relaxed parts of the body, particularly at a tender age.

The most proper form of this vestment is, upon the whole, that of *pantaloons*; but they ought to be sufficiently wide, of a thin cooling substance in summer, and of a warm elastic woollen cloth in winter. The tight and contracting leather breeches, purposely contrived to display an elegant shape of the limbs, are extremely inconvenient, occasion numbness and chilliness all over the hip and thigh, and a painful pressure of the *scrotum*. Leather is also an improper substance for this part of dress; as, on account of its close texture, it is apt to check insensible perspiration. If the waistband be too strait, the free motion of the internal parts of the abdomen will be obstructed, the absorbent vessels of the intestines prevented
from

from performing their offices, and hypochondriacal complaints easily induced. This inconvenience may be entirely avoided, by the use of *braces*, now almost generally adopted, and which, as they render a tight cincture altogether unnecessary, cannot be too much recommended, both to men and women, for the sake of health as well as comfort.

There are many reasons, which delicacy forbids to mention, why it would be highly beneficial to the physical and moral condition of females, to wear some kind of drawers, at least after a certain age. This additional piece of dress would effectually prevent several inconveniences, to which women are subject, from the want of this useful garment. There are other circumstances attending the usual dress, which contribute to bring on a premature sexual impulse, and are apt to stimulate them to improper and frequently destructive habits. This hint cannot be misunderstood by judicious mothers, and, it is humbly presumed, will not be totally slighted;—especially as young females but too readily accustom themselves to sit in an unbecoming posture.

Concerning the vestment of the legs, I must in the first place censure the use of tight *garters*, particularly in men, to whom they are altogether unnecessary. Whether females can do without them, is scarcely fair to question: but if any substitute or contrivance can be adopted in place of them, it will amply compensate any little trouble or
incon-

inconvenience, and the stockings can easily be tied to some tape fastened to the waistband. This apparently trifling improvement is of greater moment, than many are inclined to imagine; for garters are undoubtedly the cause of much mischief, whether tied below or above the knee. The part, to which they are applied, acquires a disagreeable surface; they dispose the thighs and legs to dropsy, induce great fatigue in walking, and are most probably the cause, that many people so frequently stumble, fall, and dislocate or break the knee-pan. The great difference in walking, with and without garters, I have myself sufficiently experienced. Many years ago, when in compliance with early habits and prejudices, I was accustomed to the use of garters, I could not walk or ride half a dozen miles without fatigue; which inconvenience I found immediately remedied, on abandoning these cumbersome ligaments.

The advantages of woollen *stockings* have been already pointed out. Upper-stockings of silk, cotton, or linen will be no impediment; and they may be chosen of thicker or thinner quality, according to the weather and season. But the best stockings may become hurtful, if too short in the feet, and may bring on a spasmodic rigidity, and a crooked growth of the toes. If, on the other hand, the feet of the stockings are too wide, so that they make folds in the shoes, they will injure the skin by their friction, and be attended with
painful

painful consequences. The stockings of children ought neither to cover the knees, nor be tied in any other manner, than by fastening them with strings to the waistband; otherwise they will increase the size of the knees, render them preternaturally thick, and may produce white swellings, and other dangerous accidents.

Boots, if too tight, and made of thick leather, are so injurious to health, and so troublesome in walking, that no reasonable being will be inclined to press his feet and legs into them, merely to exhibit a well-formed leg or foot. The consequences of a practice, as hurtful as it is injudicious, are obvious from the preceding inquiries.

The constant use of boots contracts the size of the legs, particularly the calves, as may be daily observed in military men, and the fashionable loungers of Bond-street and Pall Mall.

I now proceed to the last, but not the least important part of our dress, namely *Shoes*. The celebrated Dutch anatomist, CAMPER, did not consider it a subject unworthy of his attention, as he published a particular work, "*On the proper Form and Size of Shoes*," as late as the year 1781. The shoes ought to be of the size of the foot; they should be also accommodated to the degree of motion or exercise, and to the nature of the soil and place, in which we make use of them: these circumstances are at present too little attended to. A shoe that is bigger than the foot,

affords no safe step: while, one that is too narrow, occasions pain and troublesome corns. Many volumes have been written on the Art of Shoeing that noble and useful animal the Horse;—it is considered as a fundamental rule in Farriery, that the shoe must be neither smaller nor bigger than the hoof; and yet mankind can submit to screw their feet into a narrower compass than is assigned by nature. How frequently do we smile at the Chinese who, from a tyrannical custom, squeeze and compress their feet, that they may remain small and crippled. Yet these feeble Orientals proceed more rationally in this practice, than their European rivals. *They* begin with it gradually, and from the earliest infancy. *We* do not think of contracting the feet of our children, till they have almost attained the natural size: we endeavour to counteract the efforts of nature, when it is too late to do it with impunity. Who then are the greater slaves of fashion, the Chinese, or their enlightened antipodes?—It is real misery to see the young and old, of both sexes, advancing into an assembly or ball-room with the most painful sensations. Without consulting Lavater's Physiognomy, it is easy to discover, by their distorted features and compressed lips, what many persons suffer from too tightly laced or narrow, or, what is still worse, from short shoes.—Our knees would be more flexible, and our toes more pliable, more useful, and better adapted to perform the various motions of the feet, if they
were

were not continually pressed and palsied by this improper *case-work*. Nature has designed the toes to be as moveable as the fingers. Those unfortunate beings, who are born without hands, learn to perform with the toes the most astonishing tasks, to write and cut pens, to sew, to draw ; in short, to supply most completely the want of their hands.

Our feet, no doubt, would be more comfortable, easy, and useful, if we were not at the greatest pains to deprive them of their elasticity and vigour. The numerous nerves, crossing the feet in every direction, plainly evince that nature has endowed them with peculiar powers, of which we can scarcely form an adequate conception. The untutored Indian, or the wild African, excels not only the enlightened European, but likewise the lower animals, in running, leaping, balancing ; in short, in swiftness and agility of every kind, where muscular motion is required. He would heartily laugh at us, when we are obliged to employ professional operators for extracting corns, and to contrive ointments and plasters for the cure of those evils, which we have wilfully brought on ourselves.

The benevolent BUCHAN says: "Almost nine-tenths of mankind are troubled with corns ; a disease that is seldom or never occasioned but by strait shoes;" and I presume to add, that the remaining tenth part do not envy their fellow-creatures for this modern improvement. Our ancestors, and even within *my* memory, wore their shoes with

broad toes, which showed at once their good sense and due attention to health and comfort. He who is regardless of the pain and trouble occasioned by warts, excrescences, and callosities of various forms; he who wishes to convert his feet and toes into so many barometers, to indicate the present state, and to foretel the future changes of the weather, may ever agree with his shoemaker, to save as much of the leather as possible; he is scarcely to be pitied for his imprudence. Such a person will not unfrequently be disappointed in his excursions, when his crippled feet require temporary rest. I am further persuaded, that such cessations of exercise are extremely detrimental to health in general, and that they may be registered among the causes predisposing to the gout, rheumatism, and dropsy. Many people are thus almost deprived of the use of their legs, and the pain of the more virulent species of corns, as well as of the nails, when grown into the flesh, must be excruciating.

For these obvious reasons, the soles of the shoes ought to be sufficiently broad, especially under the toes, where we are accustomed to see them so pointed, as if they were intended for weapons. If, for instance, the greatest breadth of the foot be four inches, the shoe must not be three and a half, but rather four and a half inches broad, since the bulk of the foot, and the seam of the leather, require an allowance of half an inch. The soles also ought not to be bent hollow, as is frequently done in
women's

women's shoes ; for, since our foot is not so constructed as to present a spherical surface, it is improper to deprive it of that firm hold, which nature has given it by a nearly flat form. The foot must necessarily suffer by this ill-contrived shape ; as it is thus deprived of its flexion, which occasions difficulty in walking, and renders every step unpleasant and unsafe.

In the same manner, as people strangely endeavour to diminish the breadth of the foot, we meet with others, who are equally dissatisfied with its length. Hence we observe them to make use of an instrument, to force their feet into shoes perhaps an inch shorter than is required for an easy motion. This custom is the most destructive of any, and though not much practised at present, since a long and narrow pointed shoe is the most fashionable, yet the inconvenience and danger is not thereby removed. Instead of bending the toes with their nails inwards, as was formerly the case with short shoes, we now squeeze them all of a heap, and often lay them cross-ways over one another, so as to carry them about without motion, like an insensible piece of matter. Upon the least touch against a stone, we feel the punishment due to such outrage. Shoes of this kind may be aptly compared to the wooden boxes, with which the Dutch and French peasants move about from necessity, in wet seasons, and which admit of scarcely less motion than the long and sharp-pointed machines, in which

our beaux and belles cramp themselves from choice.

A convenient shoe, therefore, ought to be somewhat round in front, sufficiently long, the soles should be thick, and the leather soft and pliable. If it be deficient in any of these requisites, the skin will be rendered callous; the perspiration indispensable to these parts will be stopped; warts and corns will appear in numbers; the nails will grow into the flesh, and various complicated maladies be induced, which not only affect the feet, but the whole body. Beside these more serious consequences, a person walking with narrow shoes will be much sooner, and more sensibly fatigued, than he whose shoes are sufficiently wide and easy.—The poor, indeed, as well as country-people, who wear shoes sufficiently large, have not only a much safer step, but their feet are less subject to the multiplicity of complaints, with which we are annoyed. Those who, either from inclination or frugality, go barefooted in summer, have not even to plead the reason of the Ancients, who considered it as a mark of chastity; and I cannot help remarking, that it is both indecorous and unwholesome, as well as an ill-understood species of œconomy. The shoe, in our climate and mode of life, is a necessary defence against many accidental injuries, to which the foot is exposed; and it is likewise a crime against decency, to expose any part of the human body to dust and mire.

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With respect to the *substance* of which shoes are made, no other general rule can be given, than that it ought to be sufficiently compact, to prevent the water from penetrating it; elastic and soft, to admit an easy motion of the whole foot; and accommodated to the weather, exercise, and soil in which it is used. To those who have not the means or opportunity of procuring the patent water-proof leather, I shall suggest a method of preparing this species of leather, at a very small expence. The composition, with which *new* shoes or boots may be prepared for keeping out water and damp, is as follows. One pint of *drying oil*, two ounces of *yellow wax*, two ounces of *spirit of turpentine*, and one ounce of *Burgundy-pitch*, are carefully melted into a mass, over a gentle fire. Those to whom the smell of pitch and turpentine is unpleasant, may add a few drams of some cheap essential oil, as that of *lavender*, *thyme*, and the like. With this composition the shoes or boots are rubbed, either in the sun, or at some distance from a fire, with a sponge or soft brush: this operation is as frequently repeated as they become dry again, and until they be fully saturated. In this manner, the leather becomes at length impervious to wet; the articles made of it last much longer than those made of common leather; they acquire such softness and pliability, that they never shrivel nor grow hard and unmanageable; and boots or shoes, thus prepared, are the most effectual preservatives against cold and chilblains.

To conclude, I shall only remark, that it is not advisable to change the shoes from one foot to the other. Let us rather tread one of the shoes somewhat crooked, than injure our feet and health, by an adherence to a custom, which has nothing but custom to recommend it. If it be our serious wish to avoid corns and other painful accidents, to which the rage of fashion subjects the feet of its votaries, we should persuade the shoe-makers to provide us with a particular shoe for each foot; and this can be done only by keeping *separate double lasts*, for each wearer.—Is it not injudicious and absurd, to have both shoes made of the same size and form, when Nature has not formed both feet alike, at least not in the same direction?



C H A P. V.

Of FOOD and DRINK;—*what we ought to attend to, with respect to their Quantity, Quality, Proportion to each other, Time of taking them, &c.*
 —Of SPICES.—*A Classification of the most usual alimentary Substances, according to their individual Salubrity.*

ALTHOUGH it be certain, that animal life could not be supported without food and drink, few individuals give themselves the trouble of reflecting, how this very interesting function of assimilating our aliment is accomplished. That office of the stomach, by which all living creatures are supported, deserves the attention of every inquisitive mind. Were I not confined in my plan to the relative salubrity of Food and Drink, without entering into physiological disquisitions, how the digestive organs prepare and conduct the food from one stage to another, till it is converted into chyle, and from that into blood, I might amuse my readers with a variety of speculations and theories, none of which are generally established. Such digressions, however entertaining or gratifying to curiosity, would be of little service in the proper choice of aliment, as well as in ascertaining its wholesome or pernicious qualities.

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If, in the early periods of society, when men subsisted upon roots, plants, and animal food, as they promiscuously occurred, people did not reflect upon the relative salubrity of things, we have no right to censure them; as they often might have been starved, before they had made any useful discovery. But, if we, in our present state of knowledge, neglect such inquiries; if we indiscriminately seize upon whatever is presented to our palate; such conduct deserves severe animadversion. For, if man assume or usurp the right of calling himself the governor of the earth, and all the inferior beings, it is a duty incumbent on every member of society, to make himself acquainted with the nature and properties of those substances, which so essentially contribute to animal existence.

Hence it may be justly asked, what are the constituent parts of aliment—how can we distinguish them—are they of different kinds, or are they, with all the difference of form and taste, still of the same properties, powers, and effects—do they promiscuously supply all the parts of the human body, or are particular kinds of food more or less adapted to supply the wants of different parts of the body—and lastly, have all substances, we make use of as food, an equal share in this *nutritive principle*? Such are the questions, which must strike every reflecting mind; and as the preservation of the body much depends on the manner, in which the continual waste is supplied, it is
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a matter of the first consequence, to choose the substances best qualified to restore this deficiency, according to the different states and conditions of the body.

An eastern Dervise was once asked by a wealthy Mahometan, "Of what service to society is an order of men, who employ themselves in speculative notions of divinity and medicine?" "If you were more cautious and temperate in your meals," answered the Dervise; "if you would learn to govern your passions and desires, by a due attention to abstinence, you all might be sages, and have no occasion for Dervises among you. But your aliment and your stomach impair your understandings."

In the consumption of food and drink we are liable to commit errors, both as to their quantity and quality. The error in the quantity of nourishment is, generally, the most detrimental. A small portion of food can be better digested and easier prepared into chyle, or that alimentary fluid, from which the blood derives its origin. A large portion of food, on the contrary, injures the coats of the stomach, and prevents them from exerting their force. Hence every satiety, or superfluity, is noxious.

It is in infancy, and at an early age, that the foundation is laid for the many complaints of indigestion, which are now made in almost every family. If children are fed immoderately, and
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beyond the claims of nature, the first passages become too much distended, and their stomach by degrees acquires an unnatural craving for food, which must be satisfied, whatever be the consequence. These excessive supplies not only are of no service, but they produce the most serious and fatal disorders. There is a certain relation subsisting between what is taken in, and what is lost by the body: if we eat and drink much, we likewise lose much, without gaining any more by it, than we might do in moderate meals. For, that which affords the alimentary particles, is as it were drowned by the current; muscular energy is not thus increased, but in a great measure destroyed. Yet, eating too little would be going to the opposite extreme, weaken the growth to bodily perfection, and so diminish the digestive power of the stomach, by depriving it of its due share of support and exercise.

Nature is easily satisfied, and is always best provided, if we do not intrude upon her more than she is accustomed to. If we have taken little nourishment, for some time, nature becomes so habituated to it, that we immediately feel unwell, as soon as the proper measure is transgressed; and both the stomach and its digestive powers are thereby impaired.

The hardy countryman digests the crudest and most solid food, at which the stomach of the luxurious citizen recoils. In order to strengthen the stomach,

stomach, we ought not to withhold from it what keeps it in proper exercise. But, for this purpose, we should rather improve the quality, than increase the quantity of the aliment. It is with this organ as with all other parts of the body: the more exercise we give it, the more strength and vigour it acquires. Hence, it is highly improper to leave off eating articles of difficult digestion, as some people are apt to do; for this is not the way of improving the energy of the body.

It would be a fruitless and impracticable attempt, to lay down fixed rules, by which the respective salubrity or perniciousness of every article of aliment might be determined, in its application to the individual. It has been before observed, that such rules do not exist in nature; and that the particular state and condition of the person, time, and circumstances, must serve as our guide.

All incongruous mixtures and compositions, for instance milk and vinegar or other acids, or milk and spirits, are most generally hurtful; they generate an acid and acrid whey on the stomach, and at the same time produce an indigestible coagulated mass.

Having premised these general remarks, I proceed to treat

Of Food in particular.

I. *As to its quantity.* A much greater number of diseases originate, upon the whole, from irregularities

larities in eating, than in drinking; and, in this respect, we commit more frequent errors with regard to the quantity, than in the quality of our aliment: otherwise the inconsistent mixture of provisions, with which we load our stomachs, would disagree with every body. This likewise frequently happens. One who eats slowly, and a little only of a variety of dishes, will less injure his stomach than another, who eats immoderately of one or two favourite articles, and partakes of the others only for the sake of custom, or as a compliment paid perhaps to a fair hostess.—The gastric juice, which is generated in the stomach, is capable of dissolving and digesting the most diversified materials, provided they be not most unsuitably mixed. A perfectly healthy stomach can prepare a chyle or a milky fluid, of the same nourishing principle, from all eatable substances whatever.

The general rule then is, *to eat as much as is necessary to supply the waste suffered by the body*: if we transgress this measure, we produce too much *blood*; a circumstance, as detrimental though not so dangerous to life, as that of having too little. If we were never to trespass the due limits of temperance, our wholesome appetite could then most accurately determine, how much food we might consume, without diminishing our vivacity. But, from the usual physical education of children, this can scarcely be expected in adults. We ought therefore to pay strict attention to the state of
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those intestines, which serve to prepare the alimentary fluid; and when these are in a relaxed or diseased state, we should instantly begin to be more moderate in eating.—There are three kinds of *appetite*: 1st, The *natural* appetite, which is equally stimulated and satisfied with the most simple dish, as with the most palatable; 2d, The *artificial* appetite, or that produced by stomachic elixirs, liqueurs, pickles, digestive salts, &c.; and which remains only as long as the operation of these stimulants continues; 3d, The *habitual* appetite, or that by which we accustom ourselves to take victuals at certain hours, and frequently without a desire of eating.—Longing for a particular food is likewise a kind of false appetite.—The *true* and *healthy* appetite must ascertain the quantity of food wholesome to the individual; and if we no longer relish a common dish, it is a certain criterion of its not agreeing with our digestive organs. If after dinner we feel ourselves as cheerful as before it, we may be assured, that we have taken a *dietetical* meal. For, if the proper measure has been exceeded, torpor and relaxation is the necessary consequence; our faculty of digestion will be impaired, and a variety of complaints be gradually induced.

The stomach being distended by more frequent and more violent exertions, will not rest satisfied with the former quantity of food;—its avidity will keep regular pace with the degrees of tension. Temperance alone can reduce it to its natural
state,

state, and restore its elasticity. Fulness of blood, and corpulency, are the disagreeable effects of too much eating; which progressively spoils the stomach, and punishes the offender with headach, fever, pains in the bowels, diarrhœas, and other disorders.

The more suddenly this expansion takes place, the more forcibly and dangerously it affects the stomach. Its fibres, being too much extended, are the more sensible of the subsequent relaxation. Slow eating, therefore, preserves the fibres in a due state of elasticity. Hence, *to eat slowly*, is the first maxim in Dietetics: the stomach suffering in this case but a very gradual distension, and the food having time to be properly prepared or masticated in the mouth. He who observes this simple rule, will feel himself satisfied, only when he has received a due proportion of aliment. But he who swallows his food too quickly, and before it is perfectly chewed, will imagine he has eaten enough, when the unmasticated provisions occasion a sense of pressure on the sides of the stomach.—The teeth are designed by nature to grind our food, and to mix it with the saliva, produced by innumerable glands, and destined to promote its solution.

A healthy appetite is also determined by the season, to the influence of which the stomach is exposed, in common with other intestines. The body is relaxed and exhausted by heat, the fluids are dissipated, they are diminished in quantity, and
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consequently the stomach cannot digest the same portion of food in summer, which it does in winter. There are however people, who have the strongest appetite, and possess the most vigorous digestive powers, in the greatest heat of summer. The bile of such individuals is generally of a watery consistence, and too sparingly secreted; a defect, which is best remedied by the heat of the sun. Those who take more exercise in winter than in summer, can also digest more food. But as people of a sedentary life usually suffer in winter from a bad state of digestion, owing to a want of exercise, they ought to take less food in that season.

We call those substances *nutritive*, which restore and supply what has been wasted. They operate by conducting to the body homogeneous or assimilated parts, by means of the intestines, and by changing them into muscular substance or flesh, or into the fluid form of blood. Since some of these alimentary articles communicate their nutritive element sooner than others, as they contain coarser or more delicate particles, which according to their nature are more or less apt to be assimilated with the body, it follows, that all of them cannot be equally nourishing.

Too little aliment debilitates the body; which acquires less than it loses with every respiration; the consumption of life is thus hastened; the blood becomes inert and rarefied; it is rendered acrid and liable to putrefaction. After long fasting the
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breath is fetid, and people are much disposed to putrid fevers. We can more easily digest a heavy meal, in four hours of an accelerated respiration and muscular action during the day, than within eight hours of sleep. This circumstance has led mankind to make their principal meal about the middle of the day. A person who sits up five or six hours after supper, will feel himself much more disposed to take a second supper, than to go to bed*.

Abstinence readily induces putrid diseases: a fasting of twenty-four hours is followed with a disgust and aversion to all food, which of itself is a symptom of putrescency, and the sufferer at length will die in a state of delirium.—After taking for some time too little food, the body is enfeebled; the vessels are not sufficiently supplied; the action of them on the mass of the blood, and of the blood on the several vessels, is interrupted; its free circulation is checked; and the smaller vessels corrugate, so that
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* The following article is taken from a London Newspaper of the 4th September 1798—"A few days ago, the
"Duchess of Devonshire gave a Grand BREAKFAST to a
"brilliant party of English and French nobility. *The repast*
"began at TWO o'clock, and was over by SEVEN!!!"—At what time the noble visitors *dined* and *supped*; how many hours they occupied at these subsequent meals, or at what hour the next morning they retired to rest, is not stated. But there is a well-known anecdote of a Gentleman, who having been invited by Mr. Pitt, to *dine* with him on a particular day, at ten o'clock, excused himself on account of a previous engagement to *sup*, the same evening, with a Lady, at *nine*!

the thinnest blood is no more capable of pervading them, as is the case in old age. When a person has suffered so much from extreme hunger, that his fluids are already in a putrescent state, much food must not be given him at once; for his shrivelled stomach cannot sustain it. Such a body must be supported with liquid nourishment, in small quantities, and be treated altogether like a patient in a putrid or nervous fever. Hence, no animal food of any kind, but subacid vegetables alone, can be given with propriety.

2. *As to the quality of aliment*, we must here investigate the nature of *Digestion*. This function may be aptly divided into two different processes: *Solution*, and *Affimilation*. Solution takes place in the stomach, where the food is changed into a pulp, where it is dissolved according to its greater or less solubility, and where its nourishing particles are absorbed. Affimilation only begins, when the solution has already taken place in the stomach, when the nutritive substance, or the alimentary juice, is inhaled by the absorbent vessels, and conducted to the blood, by means of the lacteals. Affimilation, therefore, is that function, by which the aliment is as it were animalized: and hence it has been conjectured, that animal food is easier digested than vegetable, as being more analogous to our nature, and more easily converted into animal fluids. There are articles of easy and of difficult digestion, in the animal as well as in the vegetable

kingdom: in both we find some substances, which are completely indigestible, and which pass through the alimentary canal, without affording any nourishment.

The most simple dishes are also the most nourishing. The multiplied combinations of substances, though they may please the palate, are not conducive to health. All substances containing much jelly, whether animal or vegetable, are nourishing; this alone affords nutriment; and the hard, watery, and saline particles of food cannot be assimilated or converted into chyle. Nourishing substances would, indeed, be more conformable to nature; but, as as our appetite generally induces us to eat somewhat more than is necessary, we should acquire too much alimentary matter, and become too full of blood, if we were to choose no other but such articles, as contain a great quantity of jelly. Dr. BUCHAN very justly says, that “ the great art of preparing
“ food, is to blend the nutritive part of the aliment
“ with a sufficient quantity of some light farinaceous
“ substance, in order to fill up the canal, without
“ overcharging it with more nutritious particles,
“ than are necessary for the support of the animal.
“ This may be done either by bread or other
“ farinaceous substances, of which there is a great
“ variety.” Those, who are not employed in hard labour or exercise, do not require so strongly nourishing food, as those, whose nutritive fluids are in part consumed by muscular exertions and
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violent perspiration. Such as have suffered frequent losses of blood, from whatever cause, will best restore it by strong aliment; which ought to be avoided by the plethoric. Those, lastly, whose frame is weakened and emaciated by irregularities and dissipation, should not attempt to eat much at a time, but rather repeat their meals more frequently.

Whether we ought to make use of articles of easy or difficult digestion, cannot be determined by general rules: every body must attend to the effects, which substances of different degrees of digestibility produce on his stomach. The chyle, when prepared of substances not easily digestible, is more solid and concentrated than that of others; and it consequently affords a more substantial muscular fibre: but such articles as the stomach cannot digest, ought in no case to be used as food.

It is an important rule of diet, *to eat if possible of one kind of meat only*, or, at all events, *to eat of that dish first, which is the most palatable*. The stomach is enabled to prepare the best chyle from simple substances, and will produce from thence most healthy fluids. And if we follow the second part of this rule, we run no danger of overloading the stomach. In a table dietetically arranged, we ought to begin with those dishes, which are more difficult to be digested, and finish our meal with the most easy; because the former require greater digestive powers, more bile and saliva, all of which become

defective towards the end of a heavy meal. The digestive powers of the stomach are undoubtedly most vigorous and active, when that organ is not too much distended; and finally the more coarse articles also require a longer time to their due digestion.

To begin our meals, as the French, Germans, and Scots generally do, with *soups* or *broths*, is noxious and highly improper. These liquid dishes are ill-calculated to prepare the stomach for the reception of solid food; as they not only weaken and swell it by their bulk and weight, but also deprive it of the appetite for the succeeding part of the dinner. Every tension is attended with relaxation, so that we feel ourselves satisfied sooner than we in reality are. Broths and soups requiring, besides, little digestion, weaken the stomach, and are attended with all the pernicious effects of other warm and relaxing drinks. They are beneficial to the sick, to the aged, and to those who, from the want of teeth, have lost the power of mastication; but for such persons they ought to be sufficiently diluted, and not too much heated with spices;—otherwise they are digested with some difficulty.

Many people are accustomed to spend the whole forenoon without breakfast, and feel no inconvenience from it, while others of a more delicate stomach could not bear such abstinence, without unavoidable cravings and debility. The business of digestion is usually accomplished within three or
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four hours after a meal; hence, the stomach is empty at rising in the morning, and the body is enfeebled by long fasting. Our breakfast should therefore consist of more solid and nourishing substances, than are now generally used for that meal; especially if our dinner is to be delayed till the late hours which modern fashion prescribes. We should breakfast soon after we get up, dine about mid-day, and not protract the hour of supper till the time which nature points out for rest, as is exemplified in other animals.

A principal rule of diet is, to take food with an easy and serene mind; hence it is preferable to take our meals in company: our food has thus more relish, it agrees better with us, we eat slower and more cheerfully. But we ought not to indulge ourselves in sitting too long at table, which is always pernicious to health. For digestion already takes place, while we sit at table; and as the stomach, when gradually supplied, craves for additional quantities of food, especially when a variety of palatable dishes stimulates the appetite, we ought therefore to be much on our guard against these seductions. Hence it is most advisable to make our dinner on one or two dishes; because we can eat more of a plurality of dishes than of one or two only, and we do not so easily perceive when the stomach is overloaded.—To read during the time of eating, or otherwise to exercise the mind, is likewise improper.

Gentle exercise, before dinner, or supper, is very conducive to increase our appetite, by promoting the circulation of the blood. But too violent exercise disturbs the appetite, and weakens the powers of the stomach, by means of its sympathy with the other parts of the body. In proof of this, we see people worn out with fatigue are seldom able to partake of the usual repasts. The exercise, however gentle, ought to be over at least half an hour before dinner; because it is hurtful to fly to the table immediately after violent fatigue.

As to our conduct *after dinner*, it is scarcely possible to give rules that are generally applicable, and much less to every individual. From the contradictory opinion of the most reputed authors, they appear not to have discriminated between the various states and conditions of individuals; and as exercise was found to agree with some constitutions, and to disagree with others, a diversity of opinions necessarily arose among those, who are so passionately fond of reducing every thing to general rules. In order then to remove these difficulties, I think it necessary to observe, that though it be apparently consistent with the instinct of nature, to rest some time after dinner, according to the example of animals; yet this time, as well as other concurrent circumstances, deserve to be more precisely determined.

As soon as the food has entered the stomach, the important office of digestion begins: the vi-
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gour of the organs exerted on this occasion ought certainly not to be abridged by strong exercise; but muscular and robust people feel no inconvenience from gentle motion about *one* hour after the heaviest meal. On the contrary, it is highly probable, that the abdominal muscles receive additional impetus, by exertions of a moderate kind. But as the whole process of digestion is of much longer duration than most people imagine, the afternoon-hours cannot be employed with advantage to health, in any labour requiring strong exertions. The transition of the alimentary fluid into blood, which takes place in the third or fourth hour after a meal, and in some people of a weak and slow digestion much later, is always attended with some increase of irritability which, in persons of great sensibility, may degenerate into a painful difficulty and illness. At this time, therefore, nervous and hypochondriac persons are frequently troubled with their usual paroxysms; they are seized with an anguish, oppression, and inclination to faint, without any external cause. People in this condition of body, as well as all febrile patients, and in particular those who are troubled with stomachic complaints, would act extremely wrong and imprudently, to undertake any exercise whatever, before their viſuals be completely digested; as during digestion all the fluids collect towards the stomach. In violent exercise, or in an increased state of perspiration, the fluids are driven

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to the external parts, and withdrawn from the stomach, where they are indispensable to assist the proper concoction.—As to the propriety of *sleeping after dinner*, we may learn from those animals, which sleep after feeding, that a little indulgence of this kind cannot be hurtful. Yet this again cannot be established as a general rule among men. For the animals which sleep after food, are for the most part supplied with articles of so very difficult digestion, and so hard in their substance, that great digestive powers are required to convert them into alimentary matter. Hence this practice can be recommended only to the nervous and debilitated, to those of weak digestive powers, to tender people in general, who are much employed in mental exercise, and are past the middle age—especially after a heavy meal, in hot weather and warm climates. Experience, however, teaches us that, in this respect, a short sleep, of a few minutes only, is sufficient and preferable to one of longer duration; for, in the latter case we lose more by an increase of insensible perspiration, than is conducive to digestion.—But the situation of the body is far from being a matter of indifference. The best is a reclined and not a horizontal posture, from which headaches may easily arise, when the stomach presses upon the subjacent intestines, so that the blood must thereby be impelled to the head. The old practice of standing or walking after dinner is so far improper, as it is
hurtful

hurtful to take exercise, while the stomach is distended by food; the sensation of which lasts at least for one hour and upwards.

In the primitive ages, people subsisted chiefly upon plants and fruits. Even to this day, many nations, the Bramins for instance, abstain from the use of animal food. The ancient Germans, also, who were so renowned for their bodily strength, lived upon acorns, wood apples, sour milk, and other productions of their then uncultivated soil. In the present mode of life, here as well as on the Continent, a great proportion of the poorer class of country-people almost entirely subsist on vegetables. Although these people duly digest their vegetable aliment, and become vigorous, yet it is certain, that animal food would answer these purposes much better. Hence in countries, where the labouring class of people live principally upon animal food, they far excel in strength and durability.—A popular writer observes, that “animal food is less adapted to the sedentary than the laborious, whose diet ought to consist chiefly in vegetables. Indulging in animal food renders men dull and unfit for the pursuits of science, especially when it is accompanied with the free use of strong liquors.” This is so far true, but Dr. Buchan ought to have added, that the infirm, and those who labour under complaints of indigestion, will suffer still more from the use of vegetable substances alone; because these require stronger

stronger digestive organs, in order to be changed into a good alimentary fluid; and by their peculiar nature, produce too much acid.—Dr. Buchan further observes, that “consumptions so common in England, are in part owing to the great use of animal food.” To this assertion no one will give his assent, who is acquainted with that class of men, who carry on the business of butchers, among whom it is as rare to hear of a consumptive person, as it is to find a sailor troubled with the hip. I must quote another observation of this gentleman, to which I can by no means subscribe. Having remarked, that the most common disease in this country is the scurvy; that we find a dash of it in almost every family, and in some the taint very deep; he says,—“that a disease so general must have a *general cause*, and there is *none so obvious*, as the great quantity of animal food devoured by the natives. As a proof, that scurvy arises from this cause, we are in possession of no remedy for that disease equal to the free use of fresh vegetables.” He further says, “that the choleric disposition of the English is almost proverbial, and if he were to assign a cause of it, it would be their living so much on animal food;” and finally, that “there is no doubt but this induces a ferocity of temper unknown to men, whose food is chiefly taken from the vegetable kingdom.”—There is much truth mingled with much fallacy in these assertions. I
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will allow, that animal food predisposes people to scorbutic complaints, and that it renders men more bold and sanguinary in their temper; but there are a variety of other causes which produce the same effect. Nor are the English a more choleric people than the Turks, or the vindictive Italians, who are uncommonly sparing in the use of animal food. It is further not to be imputed to the consumption of flesh-meat, and the want of vegetables, that the scurvy is so frequent in this country, both on land and at sea. There appears to me to exist a powerful cause, to which people pay very little attention, and from which it more frequently derives its origin than from any other; so that the difference of food, in reality, is only a concurrent cause. If we consider the very sudden and frequent changes of temperature in our climate; if we compare the present mode of living with that of our ancestors, who did not interrupt the digestion of one meal by another, such as our luncheons are in the forenoon, and our tea and coffee in the afternoon, when the digestive organs are, as it were, drowned in these favourite liquids;—if, farther, we reflect upon the irregular manner, in which our sleeping time is arranged, so that we spend a great part of our life in the most unwholesome night-air, partly at our late suppers, and partly too in the modern practice of nocturnal travelling;—if all these circumstances be duly considered, we cannot be at a loss to discover a more
general

general cause of scorbutic complaints, than that of eating too much animal food.—After these reflections, it will not be difficult to understand, that the most important of the human functions is materially injured, by each of these irregularities. I allude to the *insensible perspiration*, which is so far from being encouraged and supported by such conduct, that the noxious particles, which ought to be evaporated, are daily and hourly repelled, again absorbed by the lacteals, and reconducted to the mass of the circulating fluids. Here they can produce no other effect than that of tainting the humours with the most acrimonious particles, and disposing them to the state of putrescency and dissolution, which is the leading symptom of scurvy. Upon the minutest inquiries among seafaring people, as well as the inhabitants of the country, I have been informed, that those individuals, who pay due attention to the state of their skin, by wearing flannel shirts and worsted stockings, by not exposing themselves too often to night-air, and other irregularities, are seldom, if ever, troubled with scurvy.

To return to the subject of animal food and its properties, it deserves to be remarked, that a too frequent and excessive use of it disposes the fluids to putrefaction, and, I believe in some sanguine temperaments, taints even the mind with an air of ferocity. Nations living chiefly upon the flesh of animals, like the Tartars, are in general more wild
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than others; and the same is manifest in carnivorous animals: they emit a very disagreeable smell, and both their flesh and milk has an unpleasant and disgusting taste. Even a child will refuse the breast, when its nurse has made use of too much animal food. Those who eat great quantities of meat, and little bread or vegetables, must necessarily acquire an offensive breath. It appears, therefore, to be most suitable and conducive to health, to combine animal with vegetable food in due proportion. This cannot be minutely ascertained, with respect to every individual; but, in general, two thirds or three fourths of vegetables, to one third or fourth part of animal food, appears to be the most proper. By this happy mixture, we may avoid the diseases arising from a too copious use of either animals or vegetables. Much, however, depends on the peculiar properties of alimentary substances, belonging to one or the other of the different classes, we have now to investigate.

Of Animal Food.

By the usual mode of dressing victuals, they lose a considerable part of their nutritious quality, and become thereby less digestible. *Raw meat* certainly contains the purest and most nourishing juice. We do not, however, eat raw flesh, but there are some articles which are frequently consumed in a state approaching to that of rawness. Such are the
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Westphalia hams, Italian sausages, smoked geese, salted herrings, and the like. Various modes of preparing and dressing meat have been contrived, to render it more palatable, and better adapted to the stomach. By exposure to the air, flesh becomes more soft, which obviously is the effect of incipient putrefaction; for, by this process, the volatile particles of an ammoniacal salt are disengaged, and it is rendered more agreeable to the taste. Pickled and smoked meat, as is very commonly used in the northern and eastern countries of Europe, acquires an unnatural hardness, and communicates a great degree of acrimony to the fluids of the human body. By *boiling*, flesh is deprived of its nourishing juice, as the gelatinous substance of the meat is extracted, and incorporated in the broth; and thus it is converted into a less nutritive and more oppressive burden for the digestive organs; because the spirituous and balsamic particles are too much evaporated during the boiling. The *broth* indeed contains the most nourishing part of it, but it is too much diluted to admit of an easy digestion. A better mode of dressing meat is *roasting*, by which its strength is not so much wasted, and the spirituous particles cannot so easily evaporate; a crust is soon formed on its surface, and the nutritive principle is better preserved. Hence, one pound of roasted meat is, in actual nourishment, equal to two or three pounds of boiled meat.

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The boiling of animal food is frequently performed in open vessels; which is not the best method of rendering it tender, palatable, and nourishing: close vessels only ought to be used for that purpose. The culinary process called *stewing* is of all others the most profitable and nutritious, and best calculated to preserve and to concentrate the most substantial parts of animal food.

When we expose articles of provision to the fire, without any addition of moisture, it is called *baking*. That such articles may not be too much dried by evaporation, they are usually covered with paste. Thus the meat, indeed, retains all its nutritive particles, becomes tender and easily digestible; but the paste is the more detrimental to the stomach, as it generally consists of an undue proportion of butter, which cannot be readily digested in that state. When meat is *fried*, it is in some degree deprived of its substance; but, if the fire be strong enough, a solid crust soon forms on the surface of the meat, by which the evaporation is greatly prevented, and the flesh rendered mellow: the butter, or other fat required to prevent its adherence to the pan, gives a burnt or empyreumatic taste, and prevents its easy digestion in the stomach.

Vegetables, upon the whole, are more difficult to be digested, than hard and tough animal substances; which from their nature are more speedily assimilated to the body; but the flesh of young animals, with a

proportionate quantity of wholesome vegetables, is the diet best adapted to our system. The flesh of fattened cattle is by no means wholesome; these animals lead a sluggish and inactive life, as they are surrounded in their dungeons by a bad and putrid air, consequently they cannot prepare fluids sufficiently healthy for the stomach.

Though fat meat is more nourishing than the lean, fat being the cellular substance of animal jelly; yet to digest this oily matter, there is required, on account of its difficult solubility, a good bile, much saliva, and a vigorous stomach. To prevent its bad effects, we ought to use a sufficient quantity of salt, which is an excellent solvent of fat, and changes it into a saponaceous mass.

Luxury has introduced an unnatural operation, which makes the flesh of certain animals at once delicate and nutritious; but still more wholesome is the flesh of the same animals, in their unmutilated state, before they have been suffered to pair. The mucilaginous and gelatinous parts of animals alone afford nourishment; and the more of these there are contained in the meat, it is the more nourishing. We find mucilage to be a principal constituent in vegetable, and jelly or gluten in animal bodies: hence farinaceous substances contain the most of the former, and the flesh of animals most of the latter. A substantial jelly, as for instance that of calf's feet, is more nourishing than
a thin

a thin chicken broth; but it is at the same time more difficult to be digested.

It is advisable, in summer, to increase the proportion of vegetable food, and to make use of acids, such as vinegar, lemons, oranges, and the like; the blood being in that season much disposed to putrescency. The man who continually takes nourishing food, is liable to become fat and plethoric; as on the contrary the miser, or the religious fanatic, from their abstinence, become thin and lean: hence the medium, or a proper mixture of both, seems to be most conducive to health. I cannot sufficiently recommend the following rule to those who are frequently troubled with a craving appetite: the more food the stomach demands, it ought to be the more sparingly furnished with strongly nourishing substances, in order to avoid obesity or fatness; and much vegetable food is in this case required, to counteract that disposition to putrescency, which the frequent eating of nutritive substances necessarily occasions. Yet, there are people who feel the sensation of hunger in a remarkable and painful degree, which generally arises from too much acid being generated in the stomach. A vegetable diet would be prejudicial to such individuals; they ought to increase the proportion of animal food; and dishes containing oily substances, in general, agree well with them. Bread and butter is useful to such persons, in order to neutralize their acid acrimony, and at the same

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time, to change the fat into a more soluble saponaceous substance. The cause of this acid, however, is most frequently a weakness in the stomach, which cannot be cured in any other manner, than by strengthening bitters, and articles of nourishment that are mildly astringent, and promote warmth in the intestines; and in this respect, cold meat, as well as drink, is preferable to hot.

The jelly of animals being the very substance, which again restores the solid parts, is obviously serviceable and necessary to nourish the human species. As, however, each kind of animal has its peculiar jelly and fat, which then only can nourish us, when assimilated to our nature by the digestive organs; as besides the different parts of animals require different degrees of digestion; it will be necessary to enter into more minute inquiries, respecting these particulars.

Experience informs us, that the flesh and intestines of young animals afford a thin, easily digestible, and nutritive jelly. Old animals, hard and tough flesh, cartilages, sinews, ligaments, membranes, membranous thick intestines, and the hard parts of the legs, produce a viscid jelly, which is difficult to be digested and assimilated to our fluids. The more healthy the animal is, the stronger will be the jelly, and the more nourishing its fluids. The most nutritious flesh is that of animals living in the free air, having much exercise and a copious mass of blood, and particularly, if they are kept in
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dry and warm places. The alkali contained in the flesh of carnivorous animals is the cause of the bad nourishment it affords, and of the injurious consequences attending its use. From the similarity in the structure of quadrupeds to that of man, it may be easily conjectured, that their jelly is most resembling ours : and of these it is allowed, that such as are fed upon milk give the best nourishment ; that the flesh of female animals is easily digested, but less nutritious than that of the castrated males, which in every respect deserves the preference. After quadrupeds, we may class birds, as furnishing us with better nourishment than fishes ; next to them amphibious animals, and lastly insects.

As animal food is strongly nourishing, it generates blood, fat, and spirituous particles, in much greater quantity than vegetable. The example of carnivorous animals proves, that the feeding upon flesh gives spirit and strength, heats the body, and preserves the solids in a lively motion. For these reasons, much animal food is improper for those of a full habit and abundance of blood, for febrile patients, and those who are disposed to hemorrhages or losses of blood. The phlegmatic, on the contrary, and those of thin watery fluids, and a weak digestion, may with safety eat more animal than vegetable food.—Of the different kinds of flesh, game is most heating ; that of young domestic animals least ; for instance of calves and chickens, particularly when they are eaten with

vegetable substances containing an acid, such as greens, asparagus, &c. That animal food disposes to putrescency, I have before remarked; hence it ought to be sparingly used in summer, and in hot climates. Persons, whose fluids already show a putrid tendency, who are reminded of it by frequent eruptions of the skin, or who are already corpulent, should abstain from a too copious use of animal food.

I have also observed, that the flesh of carnivorous animals has an extraordinary tendency to putrefaction, as is obvious from the fetid perspiration of such animals; that it contains an acrimony and alkalescency, foreign to our nature; and that it affords no mild nutriment. Much less disposed to putrefaction is the meat of granivorous animals, as partaking more of the vegetable principle; and though it be less nourishing, and less abounding in spirituous particles than the former, yet it supplies us with a milder and more readily assimilated aliment.

The flesh of fishes, being, like the element in which they live, most distinct from the nature of man, is of all others the least nutritive and wholesome.

The tame quadrupeds that suck the mother's milk, if they rest too much and are quickly fed, do not afford a good and well-prepared aliment. In animals, which have tender muscles and little exercise, those parts are probably the most wholesome
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which are more moved than others, such as the legs and head.

Poultry, upon the whole, furnishes us with the best meat, as it has the most excellent and well-digested fluids, by its more frequent exercise and constant residence in the open and pure air. Some animals, when young, possess tough and spongy flesh, which is mollified and improved by age, and can be eaten only after a certain time, or even after several years; such as eels and carp. Others are hard in their youth, and must be used early, because that hardness increases with their age; as the haddock, and many other fishes.—The flesh of old animals, that have less muscular parts than the young ones of the same species, is indigestible. Lastly, we may lay it down as a general rule, that the more readily the flesh of an animal is disposed to undergo putrefaction, it is the more unwholesome.

Veal, although its nutriment be more feeble and weak than the flesh of the same animal in a state of maturity, contains many nourishing and earthy particles, and produces little or no disposition to flatulency. It is not of a heating nature, and may therefore be allowed to febrile patients in a very weak state, especially with the addition of some acid;—it is also the most proper for persons, who have a disposition to hemorrhagies. On account of the great proportion it contains of viscosity, people disposed to phlegm and complaints of the

abdomen, ought to abstain from the use of it. For these reasons, we recommend veal-broth in diseases, with a view to sweeten and attenuate the acrid humours of the system; especially in pectoral and inflammatory disorders. And less viscous than the flesh, are the lungs of veal; being easily digested, soft, and mild, they are very proper for sick persons and convalescents. No animal fat is lighter than this; it shows the least disposition to putrescency. It may therefore be given, in preference to any other, to people of a scorbutic taint. The fat of veal should not be boiled to make it still weaker; the operation of boiling softens too much its fibres, dissolves the jelly, and renders it unfit for digestion. But, by roasting, it becomes drier, and somewhat more solid; both the serous and thick parts of the blood are incrassated in the external vessels, the fibres are dried up, and a crust is formed, beneath which the inner fluids are moved and changed into vapour, by the continued application of heat. In this operation all the fibres lie, as it were, in a true vapour-bath, and are perfectly softened without losing any of the jelly. Roasting, therefore, may be considered as the best mode of preparing this meat. Baking also forms a crust over it like roasting, but the fat incrassated by heat may easily occasion inconveniences, as it possesses an oily acrimony, and is with difficulty digested. For the same reason, it is improper to eat the burnt crust of any meat, of which some people are particularly

ricularly fond, though it contains the most pernicious empyreumatic oil, indigestible by the stomach. For roasting veal, the mellow and juicy kidney-piece, or the breast, deserves the preference: the leg is too dry and fibrous; it requires strong teeth to be well chewed, renders the use of tooth-picks more necessary than any other dish, and is frequently troublesome to the stomach. Upon the whole, veal does not agree well with weak and indolent stomachs, which require to be exercised with a harder species of meat. When boiled, it is but slightly nourishing, and people who make a meal upon veal alone, soon feel a renewal of the cravings of the appetite. For removing the acid from the stomach, veal is the most improper article of diet. But to patients recovering from indisposition, first may be given veal-broth, then roasted veal, and at last beef; the properties of which we shall now consider*.

Beef affords much good, animating, and strong nourishment; no other food is equal to the flesh of a bullock of a middle age. On account of its heating nature it ought to be avoided, where there
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* A horrid custom has been introduced by luxury, of feeding calves cooped up in boxes, so small as to prevent all motion, and from which light is totally excluded: by this cruel refinement, their flesh is, by epicures, thought to be rendered more white and delicate; but if humanity does not revolt at this practice, those who have any regard for health should avoid the use of the flesh of an animal, reared in an unnatural and putrescent state.

is already an abundance of heat; and persons of a violent temper should eat it in moderation. It is of peculiar service to hard-working people. The fat of it is nearly as easily digested as that of veal. The meat of old bullocks, which are usually then only fed and kept in the stall, when unfit for labour, is scarcely digestible; it is burdensome to the stomach, and contains, as well as that of old cows, (which is still worse,) no wholesome fluids. Though beef be more frequently eaten boiled, yet it is more nourishing and digestible when roasted. Beef, finally, is almost the only species of animal food, with which the stomach is not easily surfeited, and which is in proper season throughout the whole year.

Pork yields a copious and permanent nourishment, which indeed does not disagree with the robust and laborious, but, from its abundance of acrid fat, is not wholesome to others; as these animals live and are fed in sties without exercise, and in an impure air. From the want of clean water, their flesh acquires a tough and strong consistence, and it cannot be digested but by a strong and healthy bile. People who have impure fluids, and a tendency to eruptions, should refrain from pork, as well as those who have wounds or ulcers; for this food will dispose them to inflammation and gangrene: it is equally improper in a catarrhal state of the breast, in weak stomachs, coughs, and consumptions. The ancient physicians considered
pork

pork as the best and most nutritious meat, if supported by proper digestive powers. By allowing these animals clean food, and the enjoyment of free air and exercise, their flesh might be much improved in salubrity: but the farmer is little anxious about the quality of pork, if he can produce it in greater quantity, which he is certain to obtain from the present unnatural mode of feeding. People of tender habits may sometimes eat pork sparingly; but it is an erroneous notion that it requires a dram to assist its digestion; for spirituous liquors may indeed prevent, but cannot promote its solution in the stomach. It would be much better to drink nothing after pork for a little time, as it is usually very fat, and this fat is more subtle and soluble than any other, and has nothing in it of the nature of tallow. Pork eaten in moderation, is digested without trouble. With those, whose digestive organs are weak, no other species of meat agrees so well in general, as a small quantity of this. Hence, the objections made against it, relate more to the quantity than to the quality or substance; for, if it be eaten in too great quantity, it is apt to corrupt the fluids, and to produce acrimony. We ought therefore to eat it rarely and sparingly, and the appetite which many people have for this food, should be kept within moderate bounds. The most proper additions to pork, are the acidulated vegetables, such as gooseberry or apple-sauce; which are not only gratifying to the taste, but correct

rect its properties, neutralize, in a manner, its great proportion of fat, and thus operate beneficially on the alimentary canal*.

The flesh of *wild hogs*, as they have more exercise than the tame, and do not live upon substances so impure and corrupted, is more palatable, easier digested, less tough, not so fat, and on account of their residence in the open air, upon the whole, like all game, purer, but somewhat more apt to putrify.

Smoked hams are a very strong and not easily digested food. If eaten in proper time, they are a cordial to the stomach; but boiling them renders the digestion still more difficult.—In *salting* any kind of meat, much of its jelly is washed away, the fibres become stiff, and thus heavier for the stomach. The salt penetrates into the jelly itself, prevents its solution in the alimentary canal, and consequently makes it less conducive to nutrition.—By *smoking*,
the

* There is little to be apprehended from the worms in swine, which, according to a late discovery of the celebrated Naturalist GÖRZE, in Germany, are natural to these animals. They reside in the cartilaginous vesicles of the liver, and when these vesicles burst in very hot weather, and the worms are yet extremely small, they pass into the blood with other fluids, and gradually increase in size. But there is no instance, that they have produced diseases, unless arising from disgust. Should it however be found, that these animalculæ become visible externally, and in great quantities, the butchers ought not to be permitted to kill such hogs, as the flesh easily acquires an uncommon aerimony, is much disposed to putrify, and consequently improper to be used as food.

the fibres of meat are as it were covered with a varnish, the jelly is half burnt, and the heat of the chimney occasions the salt to concentrate, and the fat between the muscles to become rancid ; so that such meat may stimulate the palate of the epicure or glutton, but cannot be wholesome.

Sausages, whether fried or boiled, are a strong article of nourishment, but they require also a strong bile to dissolve them, and a good stomach to digest them. They are not of an acrid nature, provided they be closely filled, so as to contain no air in the interstices, nor have too much pepper in their composition. *Blood Sausages*, usually called Black Puddings, consisting of bacon and coagulated blood, which is totally indigestible, are a bad and ill-contrived article of food ; and still more so, if they have been strongly smoked, by which process the blood becomes harder, and the bacon more rancid, than which nothing can be more pernicious and destructive to the best fortified stomach. The spices usually added to sausages, in some degree correct their hurtful properties, but are insufficient to counteract the bad and highly disagreeable effects of rancid substances.

Bacon is chiefly hardened fat accumulated in the cellular texture under the skin, and is of all meat the most unwholesome ; it easily turns rancid upon the stomach, or it is so already by long hanging, and is particularly pernicious to those, who are subject to the heartburn.

Lard

Lard is a softer fat which is collected from the entrails and the mesentery of hogs; it much relaxes the stomach, likewise grows rancid there, and, indeed, is generally so before it is used.

Sheep, which are kept on dry pastures, yield a better and more nourishing food than those in moist places. Those also fed upon the sea-shore, are excellent meat, the saline particles which they imbibe, giving at once consistency and purity to their flesh. The flesh of rams is tough and unpleasant, but that of wethers or ewes, though not of a strong flavour, is of a rich viscous nature. Young mutton is juicy and easily digested, but it is rather tough, and has not that balsamic alimentary juice peculiar to sheep above a certain age. The best mutton is that of sheep, not less than two, and not above six years old. Under two years of age, it has not attained its perfection and flavour. A roasting piece of mutton ought to be exposed to the free air for several days, according to the weather and season; thus it affords a palatable dish, which is easily digested, and agrees with every constitution. But the fat of mutton is very indigestible.—The feet of this animal are nourishing, on account of their jelly, and are of great service for injections, in those diseases, which originate from acrimony in the intestines.

Lamb is a light and wholesome food, extremely proper for delicate stomachs, but not so nutritious as mutton. It is fashionable to eat this meat when
very

very young ; but a lamb that has been allowed to suck six months, is more fat and muscular, and in every respect better, than one which has been killed when two months old, and before it has had time to attain its proper consistence.

House-Lamb is a dish, prized merely because it is unseasonable. Like all animals reared in an unnatural manner, its flesh is insipid and not conducive to health.

The flesh of *Goats* is hard, indigestible, and unwholesome ; hence the meat of kids only is eatable, which is easier digested, and yields a good nourishment.

The flesh of *Deer* or *Venison*, and *Hare*, contains much and good nutriment, but, to the detriment of health, they are generally eaten when half putrified, though they be naturally much disposed to putrescency. When properly dressed, they afford a mellow food, and are readily assimilated to our fluids. But as wild animals, from their constant motion and exercise, acquire likewise a drier sort of flesh, it should never be boiled, but always ought to be roasted or stewed. From the same cause, the fluids of wild animals are more heating, and more disposed to putridity, than those of the tame. Persons, therefore, who already have a disposition to scurvy or other putrid diseases, should not eat much game, particularly in summer. This pernicious tendency of game may be corrected by the addition of vinegar, acid of lemons, or wine ; salad
also

also is very proper to be eaten with it. Those parts of wild animals, which have the least motion, are the most juicy and palatable : the back, for instance, is the best piece of a hare.

The *lungs* of animals contain nothing but air and blood-vessels, which are very tough, solid, difficult to be digested, and little nourishing. Besides, on account of the encysted breath, and the mucus contained in them, they are in reality disgusting. The *liver*, from its dry and earthy consistence, produces a corrupted chyle, and obstructs the vessels ; hence it requires a great quantity of drink ; the plethoric ought altogether to avoid it. The blood-vessels and biliary parts adhering to it, are particularly disagreeable. The *heart* of animals is dry, scarcely digestible, and not very nourishing. The *kidneys* also are acrid, hard, tough, and not easily digested by the stomach. These intestines of young animals, such as calves and lambs, however produce aliment sufficiently wholesome.

The *fat* of animals affords, indeed, a solid and elastic alimentary juice ; it increases the blood and fluids, but is difficult to be digested ; as it requires a powerful stomach, perfect mastication, sufficient saliva and bile, and agrees best with persons taking much bodily exercise. If it be not digested, it occasions diarrhœa, weakens the stomach and the bowels, stimulates too much by its uncommon acrimony, and easily turns rancid, especially when it is eaten together with meat disposed to putrefaction.

faction. Thus, it may destroy the elastic power of the first passages, as well as of the whole body, and is apt to produce the heartburn, cramp of the stomach, and headach, particularly in irritable habits; and, at length, it may generate an impure and acrimonious blood.

The *blood* of animals is completely insoluble, consequently in no degree nourishing.

The *milk* is of very different consistence and properties, not only according to the different kinds and species of animals, but also in the same species, in consequence of the difference in feeding, constitution of body, age, time of milking, and so forth. Milk takes the lead among the articles of nourishment. It affords the best nutriment to persons, whose milk and blood-vessels are too weak for deriving nourishment from other provisions; because it is already converted into an alimentary fluid in the intestines of an animal. Nature has appointed it as the food of children, by its nourishing qualities; because infants, on account of their growth, require much nourishment. From this circumstance, we may also conclude, that milk is easily digested, since at this early age the digestive powers are but feeble. Although an animal production, it does not readily undergo putrefaction; as it is possessed of the properties of vegetable aliment, and turns sooner sour than putrid. It affords a substantial alimentary fluid; and hence it is of service to persons enfeebled by disease, or dissipation.

Since the milk of animals contains more cream than that of the human breast, it ought to be diluted with water, when given to infants. As it combines both saccharine and oily particles, it is a very serviceable article of diet, in a putrescent state of the blood, in inveterate ulcers, and in the true scurvy. As a diluent and attenuating remedy, *particularly in the state of whey*, it is well calculated to assuage rigidity, cramps, and pains; it promotes perspiration and evacuation in general, and is highly beneficial in spitting of blood, hysterics, hypochondriasis, dysentery, long-standing coughs, convulsive affections, the putrid sore throat, and in complaints arising from worms. Milk is also used for fomentations, baths, emollient injections, and washes for inflamed and sore parts. If intended as a medicine, it must be drunk immediately or soon after it comes from the cow. Through boiling, and even by long standing, the best and most nutritious balsamic particles evaporate. The milk to be employed for diet in diseases, ought to be taken from healthy and well-nourished animals; for we see, by the accidents to which children are liable, how much depends on the health of the mother, and how suddenly infants suffer from an unhealthy or passionate nurse. In Spring and Summer, the milk is peculiarly good and wholesome, on account of the salubrious nourishment in herbs. In Winter it is much inferior. It is further necessary, that the animal furnishing the milk should be kept

in the free air, and have daily exercise. In order to obtain good milk, it would be advisable to keep a separate cow to ourselves; for, besides the adulteration of that which is sold, cows are frequently milked at an improper time, by which the milk is much injured, and cannot be wholesome. The best cow's milk is obtained from an animal three or four years of age, about three months after producing the calf, and in a serene Spring morning. Good cow's milk ought to be white, without any smell; and so fat, that a drop being allowed to fall on the nail, will not run down in divisions. It is lighter, but contains more watery parts than the milk of sheep and goats, while, on the other hand, it is more thick and heavy than the milk of asses and mares, which come nearest the consistence of human milk. Ewes milk is rich and nourishing; it yields much butter, but so coarse and strong, that it cannot be eaten. Both this and goat's milk produce much cheese, which is tough, strong, pungent, and difficult to be digested.

As goats are fond of astringent herbs, their milk is considered superior in strength to that of other animals; hence it has been sometimes used with the most happy success in hysteric cases.—Goat's whey, and ass's milk are chiefly used in pulmonary consumptions; where ass's milk cannot be got, that of mares may be used as a substitute*.

Every

* *Artificial ass's milk*, not inferior in its properties to the natural, may be made by the following process:—Take of

Every milk consists of caseous or cheesy, buty-raceous, and watery parts; a well-proportioned mixture of the three affords a wholesome milk. But this mixture is not always met with in due proportion; and frequently the two first, namely, cheese and butter, predominate; and in this case it affords indeed a strong food, but is of difficult digestion. If the water form the greatest proportion, it is then easily digested, but less nourishing. This is particularly the case with ass's milk, which, more than any other, affects the urine and stool, while it shows a tendency to purify the blood.

On account of the warmth, and the mechanical process of the stomach, joined to the chemical properties of the acid generated in it, milk necessary coagulates in every stomach. The caseous part is dissolved, and diluted by the admixture of the digestive liquors, and thus prepared for change into a true chyle or milky fluid. Indeed, it makes no difference, whether we take cream, cheese, and whey in succession, or whether we consume them united in the mass of the milk: in the former case, the separation takes place without, and in the latter, within the stomach.

It is however improper to eat acid substances together with milk, as this mass would occasion

eryngo-root or sea-holly, and pearl barley, each half an ounce; liquorice-root three ounces; water two pounds or one quart; boil it down over a gentle fire to one pint, then strain it, and add an equal quantity of new cow's milk.

fermentation

fermentation and corruption: while, on the contrary, the natural coagulation is only a separation of the constituent parts, not a transition of this mild fluid into the stage of acid fermentation; for this is prevented by the saponaceous digestive liquors, though the milk itself be coagulated.

Yet milk is not a proper food for the debilitated, in all cases; under certain circumstances, it may even be hurtful. It does not, for instance, agree with hypochondriacs; as it occasions cramp of the stomach, cholic, heartburn, and diarrhœa. Febrile patients, whose weak organs of digestion do not admit of nutritive articles, and whose preternatural heat would too easily change the milk into a rancid mass, must altogether abstain from it. It disagrees also with the plethoric, the phlegmatic, and the corpulent; but particularly with tipplers, or those addicted to strong spirits. Its butyrous and cheesy parts may obstruct digestion and oppress the stomach. Lastly, milk ought not to be eaten together with flesh meat, and in many cases the whey is preferable to the milk.

With these exceptions, milk is an excellent article of diet, which does not require strong digestive organs, except when a variety of other things are eaten along with it. On the contrary, people much reduced in bodily vigour have received benefit, and in a great measure cured themselves, by eating milk only. We daily observe that children at the breast, with the natural inclination to acidity

and viscosity, feel its bad effects only, when, together with milk, they are fed upon cakes, pastry, gingerbread, and other trash. Milk produces much wholesome, light, and sweet blood, since it is free of all acrimony.—Sugar and salt are almost the only proper spices to be added to it.

Cream is exceedingly nourishing, but too fat and difficult to be digested in a sedentary life.

Butter possesses at once all the good and bad properties of expressed vegetable oils; it is the sooner tainted with a rancid bitter taste, if it be not sufficiently freed from the butter-milk, after churning.—Bread and butter require strong and well-exercised powers of digestion.—It is a most pernicious food to hot-tempered and bilious persons, as well as to those of an impure stomach. The good quality of butter is marked by a very fat shining surface, yellow colour, agreeable flavor, and sweet taste.

Butter-milk is a species of whey, but it contains a greater number of butyrous particles. If we drink it while new and sweet, it is refreshing and cooling. *Sour-milk* is of an acidulated agreeable taste, if drunk without the coagulated part of it, which ought to be used only by persons possessing a vigorous stomach.

Before I quit the subject of milk, I cannot omit remarking, that this fluid, besides the qualities before enumerated, contains some spirituous parts, *in a latent state*, with which our chemists are little acquainted.

acquainted. And though these cannot be disengaged from the milk, and exhibited in a separate form, yet it is certain, that the Persians, and other inhabitants of the East, prepare a kind of wine from milk, which possesses all the properties of intoxicating liquors. Such is the report of respectable travellers; but I am inclined to suspect, that these Orientals make some addition to the sweet whey, after the caseous parts are separated from it, by which they induce a vinous fermentation. Whether they add honey, sugar, or any mucilaginous vegetable, containing the saccharine principle, I shall not attempt to decide: but we know, that the Chinese ferment and distil a liquor from rice and veal, which is not unpleasant when fresh.

Cheese is obtained from the tough part of the milk, which subsides in coagulation, and which must be completely freed from the whey. All cheese whatever is difficult to be digested, it being the coarsest and most glutinous part of the milk, which the healthy and laborious only can concoct in their stomachs. To others, it is too heavy; it imparts a thick and acrid chyle to the blood; it hardens in a weak stomach, and accumulates an indurated earthy lump. When eaten fresh, in any considerable quantity, it corrupts the fluids; and if old, it becomes putrid. In small portions after dinner it can do no great harm, but it is absurd to suppose that it assists digestion. Toasted cheese, though more agreeable to some palates than raw, is

still more indigestible. Cheese, if too much salted, like the Dutch, acquires, when old, a pernicious acrimony. The green Cheese of Switzerland, which is mixed with a powder of the wild Melilot, or the *Trifolium Melilotus*, L., and the milder Sage-Cheeses prepared in England, are the almost only kind which may be eaten without injury; and even these should be used in moderation*.

Birds, as they move in the purest and most healthy atmosphere, possess the best prepared and most wholesome alimentary substance. On account of their constant exercise, however, the whole winged tribe have drier muscles, consequently a less nutritious juice, than the tame quadrupeds. Some parts of fowls are less wholesome than others. The wings of those whose principal exercise is flying, and the legs of those generally running, are the driest parts of their bodies: hence the breast is, in all, the

* To show the strongly viscid quality of cheese, and what powers of digestion it must require to assimilate it to our fluids, I shall mention a composition which may be useful, as the strongest cement yet contrived, for riveting china-cups, glasses, and the like. A piece of Cheshire or Gloucester cheese is boiled in three or four different waters, till it form a soft and elastic mass, freed of the whey and other extraneous ingredients. After having expressed all the water from this mass, and while yet warm, it must be gradually rubbed upon a marble-stone, such as is used by colourmen; and as much unslacked or quick-lime in powder must be added, as will be absorbed by the cheese, without making it too hard. This compound forms the strongest possible cement; it is able to withstand fire as well as water, if allowed to dry slowly.

softest

softest and most nutritive piece. Young poultry is preferable to that of some years old, which have very tough muscles, and are more uneasy to the stomach. Birds living upon grain and berries are in every respect the best; next, those feeding upon insects; and last of all, that class of birds which preys and subsists upon fishes. These indeed, like all other animals, whose proper food is flesh, are devoured only by savage nations, wild and tame ducks excepted; which by their strong flesh, and the inclination of their fluids to putrescency, are less wholesome than any other bird. Water-fowls afford the least beneficial food. In general we find winged animals out of season in Spring; partly because most of them are then pairing, and partly on account of the long journeys of those that are birds of passage, by which they become leaner than at any other time of the year; although there are some birds of passage that do not arrive in this climate till towards Autumn. It deserves to be remarked, that most birds, when taken from their wild state, and fed in captivity, like partridges, larks, and others, lose much of their peculiar flavour, which is also the case with wild quadrupeds. Yet those tame and domesticated fowls and animals, that are well fed in yards and stalls, are generally more fat and muscular, than those which are obliged to seek their own food. Old fowls are the most serviceable for broth; or they might be boiled in close vessels, where they can macerate for some hours, till they be completely

completely softened by the steam. Fowls lose much of their volatile flavour, if boiled; they are therefore best roasted, except the smaller kinds, which answer well to be baked.

The birds living upon grain and berries, all afford good nutriment, except geese and ducks. The goose contains the most unwholesome flesh, especially when fed in small inclosures without exercise; which practice is sometimes carried so far, as to nail the animal to a board through the feet, to prevent its motion. Its fat is almost totally indigestible; its flesh produces a very obvious and bad effect upon wounds and ulcers. It is also pernicious to those who are disposed to inflammatory diseases, and to cutaneous eruptions.—A young hen, or chicken, is a very wholesome dish; its vegetable aliment makes a mild and sweet chyle; the whiteness of its flesh shows its excellent quality. As it is easily digested, it is a dish to be recommended to the weak and debilitated; and it agrees best with individuals of an acrid and mucous tendency, or such as are troubled with biliary and stomachic disorders.

The Capon is one of the most delicate dishes; if eaten when young, he yields a strong and good chyle; his flesh is not of a heating nature, is not disposed to putrescency, and the fat itself is easily digested. Turkeys, as well as Guinea or India fowls, yield a strong aliment, but are also with more difficulty digested; particularly the legs, wings, and fat.

fat. These birds, when roasted, are usually filled in their breasts with some kind of heavy pudding, which is a favourite morsel with many, but it requires the strongest digestive powers.—The old prejudices, that the flesh of capons is productive of the gout, and that of sparrows brings on epileptic fits, are too absurd as to deserve refutation.

Among the birds subsisting on insects, there are few which are eaten, except the various kinds of snipes and starlings. All of them, without exception, have a hard, black, dry, ill-tasted, and scarcely digestible flesh.

It would be useless to enumerate the various birds living upon fish, which are eaten in other countries. They all have a taste of fish, and afford a poor aliment. The ducks and geese only are eaten in Britain: of these the former afford the better nourishment, as they are generally not so excessively fat, or at least are permitted to move about in the open air. But they ought not to be suffered to repair to pools and stagnating waters, which they swallow, and taint their fluids and flesh with qualities detrimental to health.

Next to milk no nutriment is so simple and salutary as that of bird's *eggs*, among which those of hens justly deserve the preference, in nourishment, taste, and light digestion. The albumen, or the white of eggs, corresponds to our serum, or the water of the blood; it is dissolved in a warm temperature, but heat makes it hard, tough, dry,
and

and insoluble. The yolk of eggs is more soluble, contains much oil, and is uncommonly nourishing, but has a remarkable tendency to putrefaction: hence eggs must be eaten while fresh. People of a weak stomach ought to eat no articles easily putrescible, consequently no eggs. To those, on the contrary, who digest well, a fresh egg, boiled soft, is a very light, proper, and, at the same time, nourishing food.—Hard boiled eggs, fried eggs, pan-cakes, and all artificial preparations of eggs, are heavy on the stomach, corrupt our fluids, and are unwholesome.—We cannot be too circumspect in the use of eggs, as to their freshness; for there are examples, of persons, after having used corrupted, or only tainted eggs, being seized with putrid fevers*.

Fish,

* Various modes of preserving eggs have been contrived in domestic life. To prevent the external air from having access to the egg, is the principal requisite. With this intention some smear them with butter, others pack them in bran or common salt; others again, as the farmers in Germany, hang them in a net into fresh river-water; but all these methods are troublesome and uncertain. The best way of preserving them to any length of time, is to place them in a very strong lime-water, to leave some lime at the bottom of the vessel, and if the water should become turbid, to pour it off and to supply it with a fresh infusion. This may be done with boiling water, to dissolve more of the lime; but it must be allowed to become perfectly cold before the eggs are placed in it.

I shall here take notice of a method lately contrived to preserve animal and vegetable substances, to almost any
length

Fish, though of a tender flesh, afford upon the whole but a weak, transitory, and little strengthening nourishment. They are more or less difficult to digest, according to the different kinds of water in which they live. Being of all animal substances the most putrescible, they are much inferior to birds and quadrupeds, on which account they ought to be avoided by febrile patients and convalescents. Their fat is still more insoluble and indigestible, and readily turns rancid. On account of their in-

length of time, without salting or pickling. A Mr. DONALDSON has obtained his Majesty's Letters Patent, for inventing a powder, which is said to possess the extraordinary virtues of preserving the flesh of animals, as well as vegetable roots, to an indefinite length of time. If this be true, (though I am much inclined to doubt it,) it is easy to conceive how the Egyptian mummies could be preserved for several thousand years. Our East and West India vessels may now save themselves the trouble of taking live stock on board.

In order to afford an opportunity of judging of the merits of Mr. Donaldson's powder, or of giving it a fair trial, I shall briefly state its component parts, as recorded in the patent. —Any quantity of vegetable gum, such as Gum Arabic, or that of cherry-trees, in fine powder, is mixed with an equal quantity of fine flower of wheat or barley: this is made into a paste, and baked in an oven, contrived for that purpose, with a very gentle heat, so as to prevent it from forming a crust. Now the dry mass is again reduced to a fine powder, and this is the great and astonishing *preservative*. —Either animal or vegetable substances surrounded with this powder, and packed in close boxes in that state, according to the professions of the Patentee, keep fresh, and free from corruption, for almost any length of time.

different

different qualities, no satiety is more noxious than that of fish. Acid sauces and pickles, calculated to resist putrefaction, render fish somewhat better, and more wholesome for the stomach. Their heads and tails, as they contain the least fat, are the lightest parts for digestion, as on the contrary the belly of fish is the heaviest. Such as have a tender flesh are sooner digested than those of hard and tough consistence. The soft and mucilaginous fishes, like the eel, are partly composed of an oily slime, partly of tough fibres, and are consequently difficult to be digested. Those living in ponds, ditches, and other standing waters, are certainly less wholesome than river fish, whose exercise is greater, and whose natural element is purer. For, standing water easily putrifies, and the fish lodging in the mire of such reservoirs, continually feed upon the putrid parts. But the same kind of river fish is also of different qualities, according to their different nourishment. Thus, those caught in rivers contiguous to great towns, are less salubrious than others; because they necessarily receive great quantities of the impurities thrown into such rivers. Though fat fish be more agreeable to the palate, they are likewise more injurious to the stomach, than the lean. Salt-water-fish are perhaps the best of any, as their flesh is more solid, more agreeable, and healthy, less exposed to putrescency, and less viscid. These excellent qualities they possess when fresh; when salted, they have all the properties of salt-

salt-flesh, and consequently too its disadvantages. With respect to herrings, it is certain, that of all the sea-fish they are most easily digested; and salt-herrings, in particular, dissolve the slime in the stomach, stimulate the appetite, create thirst, and do not readily putrify by long keeping.

Among the amphibious animals, the legs of frogs are eaten in some countries, and esteemed delicate morsels; as in the West Indies is the Guana, a species of Lizard, two or three feet long, of a most forbidding appearance; but its flesh is delicate and salubrious, much resembling that of a chicken.—We also eat lobsters and crabs, which are species of water insects: as both of them, however, generally are arrived at a stage approaching to putrefaction, before they are sold in inland towns, their consumption is attended with considerable danger. Besides, the flesh of lobsters, in particular, is difficult to be digested, as it possesses a peculiar acrimony, which in swallowing sometimes occasions pain in the throat. Some people, it is said, have observed eruptions of the skin, pain in the stomach, and rheumatisms, arising from the use of lobsters. Their jelly, however, is mild and nourishing. Oysters are eaten raw, and dressed: when raw, they are in every respect preferable; for, by cooking, they are deprived of a great proportion of their nourishing jelly, and are rendered burdensome to the stomach. Raw oysters are easily digested, and may be eaten, with great advantage,
by

by the robust, as well as by the weak and consumptive; as this shell-fish possesses more nutritive animal jelly than almost any other. They further are generally attended with a laxative effect, if eaten in any quantity: hence they afford an excellent supper to those liable to costiveness.—Snails are equally nourishing and wholesome, though seldom eaten in this country. On account of their gelatinous nature, they have lately been much used against consumptions; and as these complaints are now very frequent in Britain, it were to be wished, that such patients may give this remedy a fair trial, by boiling a dozen of the red garden-snails every evening in a quart of sweet milk or whey, for half an hour, then straining the liquor through a coarse cloth, and drinking it with sugar every morning gradually upon an empty stomach; and to repeat these draughts for a month or two, if required. This red garden-snail (or the *Helix Pomatia*, L.) has also been used with great advantage externally in the open hemorrhoids, where fresh snails were applied, every two or three hours, in a raw state.

Muscles are of a more solid texture, and therefore not so readily digested as oysters. The sea-muscles afford a hard, indigestible, and, as some imagine, poisonous food. Although the examples of their deleterious nature be very rare, yet they ought not to be eaten without vinegar, or some other vegetable acid, acting as a corrector of their
bad

bad qualities, or in the opinion of others, as an antidote.

IV. *Of Vegetable Aliment.*

The various articles of nourishment we derive from the Vegetable Kingdom, may be aptly divided into five orders ;

1st, The different species of farina, or grain, such as wheat, rye, barley, and oats.

2d, The legumes or pulse, such as peas, beans, &c.

3d, The various kinds of salads and pot-herbs.

4th, All the different roots ; and,

5th, Fruit, or the production of trees and shrubs.

The first of these, namely the farinaceous, are very nourishing, on account of the copious mucilage they contain ; but they are likewise difficult to digest. Bread itself, though justly called *the staff of life*, if eaten too copiously, or to serve as a meal, produces viscidities or slime, obstructs the intestines, and lays the foundation of habitual costiveness. All dishes prepared of flour, are not only nourishing, but are emollient, attenuating, and correct acrimony. Leavened bread, or such as has acquired an acidulated taste by a slow fermentation of the dough, is cooling and antiseptic ; a circumstance well established by experience. By this process of preparing the dough, all the tough parts are most intimately mixed with the drier parts of the flower, and the fixed air is expelled in baking. New-baked

bread always contains much of an indigestible paste, which is remedied, either by allowing it to dry for two or three days, or by toasting it. This ought to be done regularly, particularly in times of scarcity, both on account of health and economy. Stale bread, in every respect, deserves the preference: and persons troubled with flatulency, cramp of the stomach, and indigestion, should not upon any account eat new bread, and still less, hot rolls and butter. Indeed, all pastry whatever is unwholesome, particularly when hot. Those who devour hot pies with avidity, should consider, that they contain an uncommon quantity of air, which distends the stomach, produces the most alarming and dangerous colics, and incurable obstructions, by which the stomach and bowels have been known to burst. The porosity of bread arises from the fixed air having been expelled in baking; and the more spongy the bread, it is the more wholesome. But new-baked bread, and rolls in particular, require a sound stomach; because they contain much mucilage, not having parted with all their moisture; and wheat-flour is more viscid, than that of rye, which is the bread-corn of most nations on the Continent.—Bread and butter, together with cheese, as is eaten in Holland and Germany, form an indigestible mass in the stomach. The external surface of bread, or the crust, which has been more dried by the heat of the oven, is easiest digested; it contains the empyreumatic part, expelled

pelled by fire from the flour ; it produces an emollient effect on the bowels ; but, at the same time, is more heating and less nourishing than the crumb. The great difference in bread is owing, partly to the different species of grain, from which it is made ; partly to the time the flour has been kept, for, the newer it is, the more difficult to deprive it of its tenacity ; partly to its being more or less cleaned from the bran ; partly to the different methods of fermenting and baking it ; to the difference in the water, with which the flour has been kneaded ; and lastly, to the various ingredients, of which the paste has been compounded. The softness of the mill-stones used in grinding the flour, may also corrupt the bread, so as to make it equally noxious to the teeth, and oppressive to the stomach, by introducing particles of sand and marble. Well-baked, and thoroughly dried bread, is easily dissolved by water, without rendering it viscid or gelatinous : hence it is the best food for the debilitated, as well as for every age and temperament. Hasty-pudding, on account of its tenacity, and the quantity of mucilage it contains, is not so easily digested as many people imagine, who feed their infants upon this dish : porridge made of oatmeal, the common food of children, and the lower class of adults in Scotland, is not so heavy as that of wheat-flour ; though both of them require vigorous digestive organs, robust constitutions, and strong exercise, in order to produce a proper nutriment. The well-known *vermicelli*, and *macarone* of the Italians, are ill calcu-

lated for patients and convalescents, to whom they are frequently administered. A paste, when it is so elastic that it can be formed into balls, is extremely difficult to be digested; and the more so, if butter be mixed with it. All unfermented pastry is excessively trying to the human stomach; and instead of wondering, that the lovers of such dainties are continually troubled with indigestion and other stomachic complaints, it would be against the order of things, if it were otherwise. Bread ought not to be eaten with every vegetable dish; it is more useful and necessary with those articles, that contain much nourishment in a small bulk, in order to give the stomach a proper degree of expansion. Besides, the addition of bread to animal food has another advantage, namely, that of preventing the disgust attending a too copious use of flesh, and its strong tendency to putrefaction. But, if we accustom ourselves to eat new-baked bread, to provisions already indigestible in themselves, such as fat geese, bacon, blood-sausages, and the like, we make them still more insupportable to our digestive organs. Of the different kinds of grain, from which bread is prepared, that of rye is by far the most wholesome, for people of a sedentary life, as well as the delicate and nervous. For, though it be less nourishing, it is likewise less tenacious, and easier digested, than bread made of wheat.

The *second* order of vegetable aliment includes all the leguminous productions, as beans, peas, lentils, and the like; they have a solid gluten or
mucilage,

mucilage, and afford a rich and strong nutriment, which best agrees with a vigorous stomach. They also contain a considerable share of crude particles, which cannot be assimilated to our fluids, and must therefore remain undigested in the bowels, to the great detriment of the alimentary canal. The *meal* of the leguminous class is digested with more difficulty than that of grain; it further contains much fixed air; on which account it is extremely flatulent, is apt to produce costiveness, and to communicate various kinds of acrimony to the blood. These effects, however, it produces only when it is eaten too frequently and copiously, by mixing, for instance, peas or beans with wheat, and grinding them together for bread. Yet we must not imagine, that even the most wholesome articles of food are altogether free from air: this element is a necessary and useful ingredient, to promote the digestion of alimentary substances. The proportion of fixed air varies extremely in different vegetable substances; the leguminous plants, in particular, abound in it. For even those, with whom they in other respects agree well, must perceive flatulency and torpor, after a copious use of peas or beans. Similar disadvantages attend the eating of green peas, in the beginning of a meal; and those who are fond of peas-soup, would better consult their health, by boiling the peas whole, than split and deprived of their husks; for these promote the grinding of the peas, and prevent them from turn-

ing acid on the stomach, which split peas readily do, and they are also apt to occasion oppression in the bowels, and a very troublesome heartburn.

The *third* order of Vegetables comprises the various kinds of salads, and herbs used for cooking, such as greens, cabbage, spinage, and the like. These contain little nourishment, but a great proportion of water; they serve to fill the stomach; they resist putrefaction, and may therefore be eaten in greater quantity in summer than in winter; being, besides, of a softening, laxative, saponaceous, and consequently solvent nature, they are well calculated to relieve the bowels. On account of their watery consistence, they are of peculiar service to lean people, to those who lose much moisture by perspiration, who are troubled with flushings and undulations of the blood (upon which occasion animal food is improper)—and as these vegetables assist insensible perspiration, they are cooling, and forward all the emunctories of the body. Their nourishment is in proportion to the mucilage contained in them; and as this is in a very diluted state, the aliment they afford is inconsiderable. They are further distinguished by the earthy, acrid, and aërial particles contained in them, both with respect to their nutriment, and their effects upon the first passages. By boiling, they become soft, many of the aërial particles are expelled, and they are thus more fit to be digested. But the practice of boiling them in large quantities of water, which is afterwards

afterwards poured away, is extremely absurd and injudicious; for, together with the water, the best and most nutritious parts of them are also thrown away: hence these vegetables ought to be thoroughly washed, and, cabbage excepted, stewed in a small quantity of water only, which will so far be reduced by slow boiling, that it may be brought to the table, together with the vegetables. Ignorant cooks, therefore, should not be indulged in their old, but improper practices.—To improve their relish, as well as to render these vegetables less flatulent, we generally add spices, which also assist digestion. And for the same reason, in a raw state, they are eaten with vinegar, salt, pepper, and the like.

Salads, being, in general, eaten with oil and vinegar, call for all the powers of the stomach, to digest these liquids, together with the raw herbs. *Baked* vegetables with paste and milk, as they are prepared in some countries, lose all their principal virtues, and readily acquire an empyreumatic oil upon the crust, which is indigestible, and taints the fluids with a dangerous acrimony.

Spinage, a favourite dish with many, affords no nutriment, passes through the stomach and bowels in an undigested state, and, as it is usually dressed with butter, weakens the alimentary canal, produces looseness, and consequently is no proper food for the weak and debilitated.

Sorrel possesses an acrid acidity, which deprives the teeth of their enamel, and ought to be avoided

by those, who are already troubled with an acid taste in the mouth.

Red Cabbage is one of the most indigestible vegetables, particularly, as the French and Germans eat it, with ham and chefnuts; it is thus rendered more heating than cooling, flatulent and laxative, and contains no nourishment.—More digestible, cooling, and less hurtful to the bowels, are the young sprigs of cauliflower; but the most indigestible of all is the Colewort (*Caulis rapicius*). What has been said with respect to cabbage, is applicable also to the Orach, or *Atriplex*, and the Lettuce, when eaten boiled or stewed.

White Cabbage is possessed of excellent properties; it is less flatulent than the common greens, and, being full of water, it is diuretic, and sometimes laxative.—It deserves to be remarked, in general, that all herbs and plants are more or less flatulent, according to their digestibility, and are disposed to putrescency, in proportion to the time they remain in the alimentary canal.

Of White Cabbage sliced or cut in thin threads, and afterwards seasoned and salted, the Germans make *Sauer Kraut*: it is easily digested, on account of the salt mixed with it, and the acetous fermentation it has undergone, before it is used, and by which the greatest part of its fixed air is expelled. Sauer kraut may be preserved fresh for a long time; it operates powerfully on the first passages; being one of the most excellent antiseptics, it has proved
of

of singular service at sea, in resisting the ravages of the scurvy, and curing it in the most alarming stages. We are indebted to Captain Cook, for introducing this salutary dish among the sailors, in spite of all prejudices, and thus saving the lives of many brave mariners. Lastly, Sauer kraut has been found to be the best preventive against epidemic distempers, and in particular against the dysentery, the putrid and petechial fevers, which have even been frequently cured by it.

Lettuce contains many nitrous particles, is very cooling, and useful in the evening to those who cannot sleep, from too great heat and undulations of the blood. But the copious addition of oil and the yolk of eggs, renders it less digestible than it is by itself; and if these must be used, it is better to add some sugar, which decomposes these substances. The most suitable ingredients of Salads, besides the Lettuce, are the various Cresses, Chervil, (*Chaerophyllum bulbosum* Linn.) and the scurvy-grass, which, together with other cooling herbs, produce the effect of cleansing the humours, or, as some say, of purifying the blood, and are at the same time diuretic; especially if eaten in Spring, upon an empty stomach.

The *fourth* order of Vegetables consists of all the esculent roots, or such as are used at our tables. They are either of the mild, or of the astringent and acrid kind. The former are much more nourishing and less flatulent than the latter, which however possess some medicinal powers, such as the
various

various species of radishes, onions, garlic, and the like.—Upon the whole, roots are neither so nourishing, nor so easily digested as animal food. Yet we may consider it as a certain rule, that any kind of aliment, for which we feel a natural and permanent appetite, is conformable to our nature. Of this kind is that beneficial root, the potato, which, in the most simple preparation, and without any addition, affords an agreeable food to almost every person, and particularly to children. It is one of the lightest alimentary substances, occasioning neither viscidities nor flatulency, and can be hurtful only, when immoderately used. But, being a dry vegetable, it requires a proper quantity of drink to prevent obstructions, as it contains many earthy particulars. Its excellent nourishment is sufficiently obvious in those country people, whose principal food is potatoes, as well as in animals that are fattened upon these roots. The quickness, with which the chyle made from potatoes, is assimilated to the blood, leaves no doubt, that they are easily digested; for it is a general remark, that labouring people sooner feel a renewal of their appetite, after potatoes, than any other species of food. It is a groundless assertion, that they generate a thick and crude chyle, and consequently a thick and viscous blood. It is equally unfounded, that the potato is a narcotic plant, and stupifies the powers of the mind; which is amply refuted by experience. This effect is produced

duced only from a too copious use of them, together with want of exercise; in which cases any other food might be attended with the same consequences. The stimulating or aphrodisiac powers ascribed to potatoes, appear to me grounded in fancy. Those of a farinaceous consistence are much easier digested, than the heavy and gelatinous kind. The flower, made of potatoes, is more wholesome for pastry, and for all those dishes prepared of meal, than any other. The French have lately contrived a method of preparing a granulated flower from this root, which is uncommonly pleasant to the palate, and very nourishing. It is done by a machine of simple construction, a representation of which, together with a description, was given some time ago in the Repertory of the Arts and Manufactures;—and it has also been used successfully, mixed with wheat flower, in making bread.

Carrots are extremely flatulent, and therefore an improper food to the weak, and those inclined to acidity; by such individuals they can scarcely be digested. In other respects, they contain a good and copious alimentary fluid, at the same time powerfully affect the kidneys, and are likewise anthelmintic, or destructive of worms.

Turnips are nourishing, but flatulent and not easily digested; they become still more indigestible with age.—The least flatulent and most nourishing of these roots are the long kind, or Swedish Turnip, lately introduced into this country.

Parsley,

Parſley, Smallage, Celery, the Skirret root, and the Scorcenera of Spain, contain more ſtimulating and ſpicy, than nutritive qualities; they are diuretic, and conſequently in ſome degree aphrodiſiac; they are not heavy upon the ſtomach, but they create flatulency.

Onions, Garlic, Shallot, and Chives are ſtimulants; they aſſiſt digeſtion, relieve the bowels, expel flatulency, diſſolve ſlime or mucus, and are therefore of ſervice in diſeaſes which proceed from too much viſciditiy; they further increaſe the appetite, and ought to be uſed principally as ſpices, or medicines. They are uſeful to ſtomachs which require and can ſuſtain a ſtimulus of this kind, are powerful expectorants, but muſt be avoided by very hot, irritable, and choleric temperaments. Although theſe roots are eaten in quantities by whole nations, yet from their penetrating and volatile ſmell, which they communicate to the human breath, it is certain, they agree beſt with individuals of a cold and phlegmatic habit, and thoſe whoſe ſtomachs require ſo powerful a ſtimulus.

All kinds of *Radishes* may be conſidered as medicinal roots; they are peculiarly calculated to diſſolve ſlimy humours, to generate, and alſo to expel flatulency; moving the air incloſed in the inteſtines, and expelling it, by the copious air contained in themſelves. They are healthful to ſtrong and not irritable ſtomachs; but in thoſe ſtomachs, which are deficient in elaiſticity, radishes increaſe
flatulency

Flatulency to the highest and most troublesome degree. The small salad-radishes are more readily digested than the large root; they propel all the alimentary fluids towards the stomach, increase the appetite, and are therefore proper to be eaten before a meal. Old radishes are altogether indigestible, and the whole genus, like onions and garlic, occasion a very offensive breath.

The *fifth* and last order of Vegetable substances comprehends the *Fruit*, or productions, of the different trees and shrubs.

Fruit, in general, possesses strongly resolvent powers, and it is the more beneficial, as it comes to maturity at a time when the body is relaxed by the heat of Summer, and when the blood easily acquires an inflammatory disposition. It is further of great service, in attenuating the thick bilious impurities collected during the Summer, and of evacuating them by its laxative virtues. The acid contained in the most kinds, is as useful to quench thirst, as to resist putrefaction. In weak stomachs indeed, or such as are filled with acid and slime, it is apt to ferment, and occasion some inconveniences; but these may be avoided by a temperate use of it, and especially by eating it boiled. The more sap or juice we meet with in fruit, it will prove the more flatulent. Yet as the juicy, cooling, and watery species of fruit require strong digestive organs, to prevent them from producing fermentation, flatulency, and diarrhœa, a glass of
old

old wine is very proper to promote their digestion. A gentle diarrhœa, brought on by eating ripe fruit, in Summer, is frequently a beneficial relief. Acrid and astringent fruit, though rather a medicine than food, is less hurtful to the healthy, and to children, than is commonly imagined. Instead of being noxious, as some fancy, in inflammatory disorders, it is of the greatest service. Persons of a thick and black blood cannot eat any thing more conducive to health than fruit, as it possesses the property of attenuating and putting such blood in motion; but those of a watery and phlegmatic constitution ought carefully to avoid it. Fruit preserved with sugar is antiseptic and nourishing, but at the same time flatulent. If preserved with vinegar and spices, it is heating and drying. With beer or milk it agrees with few persons. It is most wholesome when eaten on an empty stomach, which can exert all its power to expel the air disengaged from it, and to remove it, before it begins to ferment. Boiling, as well as drying, corrects the flatulent tendency of fresh fruit, so that, thus prepared, it will agree with every body. By either of these methods it is deprived of its superfluous humidity, as well as of its fixed air; whence it becomes more nourishing, but not so cooling, as in the fresh state.

Cherries produce the effects now stated, in a very eminent degree; they are excellent in scurvy, in putrid fevers, and in dysentery; they correct the
blood,

blood, when inclined to putrescency, and by their saponaceous and melliferous juice, they powerfully resolve obstructions in the intestines. Those who use them with this intention, should eat them through the whole day, though they operate most effectually in the morning, on an empty stomach. Even the sweet species contain a stimulating acid, which, in proportion to their juicy consistence, more or less disagrees with the weak and debilitated. This sap or juice easily ferments in the stomach, and produces flatulency, diarrhœa, and acidity. On account of these peculiar effects, those whose stomachs are bilious and corrupted, who are troubled with putrid eructations, and an offensive smell from the mouth, ought to eat them in quantities, to counteract that disposition to putridity. Cherries are divided into the aqueous-sweet, the aqueous-acid, and the dry-fleshy kinds. The Spanish cherries are the most difficult to digest, but are also the most nourishing. The aqueous-sweet kind, as our early common cherries, are not healthy; their juice easily ferments, and occasions colics and diarrhœas. The watery-acid sort are the best of any; their juice strengthens the stomach, purifies the blood, and is the least flatulent.—Dried cherries are in many diseases an excellent article of diet, on account of their cooling and antiseptic qualities. The swallowing of cherry-stones, however, is in a high degree pernicious, as these stones have sometimes been found to accumulate in the intestines,

tines, to form lumps cemented together by viscid phlegm, and thus to produce the most violent and fatal symptoms.

Plums also possess medicinal powers, and are nourishing and attenuating. When dried, they are of peculiar service in costive habits: but if eaten fresh, and not quite ripe, especially in large quantities, they are apt to occasion looseness, colics, and other maladies of the stomach and intestines. The larger sorts of plums are in general more dangerous, in this respect, than the small ones, as they (particularly the green and yellow kind) are seldom allowed to grow perfectly ripe.

Peaches contain a great quantity of juice, and though not very nourishing, they are not productive of diarrhœas. With great injustice was this salutary fruit formerly decried as unwholesome; it is rather serviceable in obstructions and bilious disorders. Sugar, wine, and the like, diminish the good qualities of peaches; and even when preserved in brandy, they are not so wholesome as when fresh; since they become hard by all artificial preparations. The kernels likewise of peaches are a wholesome bitter, and are cleansing, on account of their astringent properties. *Apricots* are more fleshy than peaches; but they are not more nutritive.

Of *Pears*, some are extremely hard, astringent, and difficult to be digested; but the more juicy pears have a saponaceous, nourishing, and readily digestible

digestible fluid; in their effects they resemble the sweet kind of apples; except that they are less relaxing to the bowels. Yet, upon the whole, pears are of a more flatulent tendency than any of the fruits before mentioned, and especially the hard winter-pears, which are eaten at a time when the stomach requires warming more than cooling food.

Apples are, in their general effects, similar to other fruit, and beside their fragrant virtues, they are possessed of laxative properties. They are of considerable service in diseases of the breast, to remove spasmodic contractions, to neutralize acrimony, and to attenuate viscid phlegm. With this intention, apples may be eaten either roasted or boiled, but not to so much advantage when raw. The common people in Germany are so sensible of their excellent properties, in inflammatory diseases, that they boil even the wild apples, and drink the water. This process deserves to be imitated, especially when apples become scarce in Spring.

Apples may be aptly divided into the spicy, the acidulated, and the watery species. The first, the various kinds of rennet, for example, have the most delicate flavor, and are, upon the whole, the best; they do not contain a superfluity of water, and, from their vinous nature, are not apt to excite flatulency. Other kinds of apples, like the pippins, are too hard, consequently burdensome to the stomach, though somewhat more nourishing than the former. Stewed apples are easily digested and

wholesome. The kernels or seeds of apples are bitter and aromatic ; nature seems to have intended the seeds for correcting the watery and fermentable fluids of this and all other fruit, apricots excepted. Hence the kernels of apples and pears, as well as those of plums and cherries, ought to be eaten with the fruit, and not be thrown away as useless. The butter in the paste of apple-pies may be considered as an useful addition, on account of its tendency to prevent fermentation, though the pastry itself always disagrees with weak and irritable stomachs.

Of *Quinces* we have two species, namely, the apple and pear-quince : the latter are the most wholesome, particularly those from Portugal. They are an excellent antiseptic, and in this respect the best kind of fruit, containing an acid and much mucilage. They are not liable to cause obstructions ; but their pulp, like that of all other fruit, is digested with some difficulty. They are generally eaten boiled with sugar, and are excellent in dysentery, on account of their copious mucilage.

In *Lemons, Oranges*, and other fruits of that kind, there are three different substances. The external rind contains an essential oil, is strongly astringent and heating ; the second or white rind is without taste and efficacy ; the third part of them is a salubrious, cooling, and acid pulp, highly efficacious in counteracting the putrid tendency and dissolution of the blood. The juice of lemons and limes is one of the strongest vegetable acids ; that of
oranges

oranges and shaddocks, though milder, is not less salutary. This acid is of a very saponaceous consistence ; it attenuates the fluids, removes obstructions, encourages digestion, stimulates the appetite, quenches thirst, cools the blood, counteracts putrefaction, is a principal remedy in pectoral, bilious, and inflammatory diseases, as likewise in scurvy, in all affections of the kidneys, and against the narcotic vegetable poisons. Thus the largest dose of opium may be checked in its narcotic effects, if a proper quantity of the acid of lemons be taken with, or immediately after it. Four grains of pure opium, for instance, or one hundred drops of laudanum, is a very powerful and sometimes fatal dose ; yet if one ounce of the pure acid of lemons be added to every grain of opium, or to twenty-five drops of laudanum, it will produce a very different effect. Instead of stupifying the person who takes it, and instead of being attended with painful costiveness, it will not only prove laxative, but induce first a cheerfulness, not attainable by the use either of opium or strong liquors, and afterwards bring on a gentle and refreshing sleep. Of these effects I can speak from my own experience, as well as that of others. Opium, used with this addition, is one of the most salutary and beneficial substances we are acquainted with. I am further inclined to believe, that the Turks, who eat very little animal food, could not bear the large quantities of opium they swallow, were it not for the copious use of vegetable acids.

And that these form a principal part of a Turkish summer diet, every traveller knows, who has visited these eastern climates. For these reasons, I cannot sufficiently recommend the use of acids to those, who are either accustomed, or obliged, to take opiates in large doses. In choleric, bilious, and plethoric habits, in persons liable to obstructions; whose alimentary canal is unclean, and lastly, in those who feel a determination of the blood to the head, opium is an uncertain, and even dangerous medicine, without the addition of vegetable acids. The want of the acid of lemons may be effectually supplied by an indigenous production: barberries afford an acid fully as strong, and nearly as agreeable, as that of lemons.

Not unlike the juice of lemons, but less efficacious, are the different species of *Currant*; and they are likewise diuretic. *Gooseberries*, which have not so much of the acid, are more wholesome, as we do not swallow their skins. When used green for sauces and pies, they are cooling and refreshing: when ripe, they produce almost the same effects as cherries.

Grapes and *Strawberries* are both excellent fruits, and are still more salutary than cherries. They are uncommonly resolvent, the best remedies for purifying the blood, laxative without debilitating, and promote all the natural evacuations. But at the same time, grapes are in a high degree flatulent. Strawberries, if eaten in quantity, have been
found

found a safe preventive against the stone in the kidneys; as is attested by the experience of the celebrated LINNÆUS. Yet the small stones contained in strawberries, as well as in grapes, are said to accumulate in the intestines of some people, and to give rise to the most obstinate constipations, nay even to the iliac passion. The best method of eating strawberries is with pure water, and sweetened with a little sugar; they are more heating with wine, but less wholesome; with milk and cream they are an agreeable but a more improper composition. As a medicine, the wild strawberry is far preferable to any other.

Cucumbers are a wholesome, gently opening, and cooling fruit, which may be of considerable service to the consumptive, as it has the property of sweetening acrid humours. They show a tendency to ferment, and produce diarrhœa; but this may be prevented by the addition of vinegar and pepper, which also counteracts their natural coldness. Prepared with oil, vinegar, salt, and pepper, they are insupportable to some weak stomachs, and occasion frequent eructations and flatulency. But properly pickled, they are an excellent antiseptic.

Much of the same nature with cucumbers are *Melons*; but they are more aromatic, and, in this respect, more healthful. *Water-melons*, however, require more spice and wine than *Musk-melons*; as they partake more of the nature of Cucumbers.

Almonds, *Walnuts*, *Hazelnuts*, and *Nuts* in general, are extremely difficult to be digested, on ac-

count of the oil they contain, which readily turns acrid and rancid on the stomach, and occasions the heartburn. Bilious individuals should by no means eat them; and there is nothing so absurd as to administer almond-milk as a common diet-drink to febrile patients. This milk consists altogether of oily and almost insoluble parts, which heat and corrupt the stomach, stimulate the bile, and are easily decomposed from the water with which they are mixed. It quickly spoils; frequently, indeed, before it is introduced into the stomach: it is not in the least degree cooling, and its nourishing quality is very improperly employed in fevers, and all those diseases which are attended with debility of the alimentary canal. Nuts and almonds ought to be eaten only while fresh, and when the skin, which is extremely astringent and hurtful, can be removed. They should be well chewed, and eaten with salt; for every piece swallowed entire is indigestible, and the salt renders them miscible with our fluids as a saponaceous mass. If eaten in large quantities, they remain in the stomach, cannot be expelled by any medicines, and produce alarming, and sometimes fatal disorders. In general, they occasion difficult breathing, vomiting, and complaints in the bowels, which have been observed to be very common in those autumns, that were productive of great quantities of nuts.

Last among the vegetable productions, we may class the various species of *Mushrooms*. They are all of a tough, leathery consistence; and being
almost

almost indigestible, they afford little nutriment, notwithstanding they, 'in a great measure, resemble animal food.

Several kinds of mushrooms are said to contain a narcotic and acrimonious poison. And as those of a harmless kind cannot be easily distinguished from the bad ones, this might be a sufficient reason to abstain from the use of them altogether. But if they must appear at our tables, vegetable acids, or vinegar, are the best antidotes, to prevent dangerous accidents. Pickled with vinegar, or salted, mushrooms become still more tough; and roasted with butter, they are a most indigestible mass, and extremely liable to turn rancid in the stomach.

Of Drink in particular.

I. With respect to its Quantity.

Drinking is perhaps more necessary to the support of animal life than *Eating*; for drink is indispensable to the digestion and solution of food. Those who drink too little, people, for instance, of a sedentary life, and particularly women, are subject to complaints of indigestion. Sufficient drinking prevents the incrustation of the blood, and the obstruction of the smaller vessels; it tends to clear the blood of the acrid particles generated in it; it promotes the necessary secretions, such as the bile and the gastric juice of the stomach.

We ought properly to drink only when we are thirsty, and to give over when thirst is quenched: but this is seldom the case, since many of our liquors stimulate the palate. Pure water, therefore, is an inestimable beverage, as it will not induce us to drink more than is necessary. We should drink in a greater proportion than we eat; for the quantity of our fluids by far exceeds that of the solids, and consequently there must be secreted more fluids than solids. The general rule may be given, to take about double the proportion of liquid to the dry food; but this cannot be accurately observed, nor is it a general rule in all cases. The season, the weather, cold, heat, the nature of our food, the greater or less degree of our exercise, require more drink at one time than at another. Thirst, however, is as good, if not a better guide than hunger; and he who is accustomed to drink water only, will not easily transgress the measure, if he drinks as often as nature calls upon him. With a proper choice of food, every body would drink conformably to his wants. Hence, it is needless to recommend the drinking of water to people, who will not be persuaded to change their irregular mode of eating.

The more we eat in quantity, and the drier our victuals are, the more we ought to drink. The phlegmatic have less inclination to drink than those of a sanguine and choleric temperament. The laborious ought to drink more than the sedentary,
and

and still more in summer than in winter, to supply the humours lost by insensible perspiration.

In the morning when we rise, we generally feel an inclination for drinking, which is relieved by tea, coffee, or other warm liquors. Water would unquestionably be a more proper beverage at this time; and I venture to say, it would be disagreeable to those only, whose stomachs are spoiled by the habitual use of warm liquors and hot rolls. A glass of pure fresh water, and a while after it, a piece of bread with some fruit, or even butter, would afford a very wholesome breakfast, by which the stomach and the intestines might be cleared, the blood and humours refreshed, and the whole body strengthened. If the stomach be not loaded with mucus, or otherwise corrupted by tippling, a basin of sweet cow's milk, with a piece of stale bread, is an excellent breakfast in Spring and Summer.

To drink immediately before a meal, is improper, because the stomach is thereby swelled, and rendered less fit for the digestion of food. Hence, to avoid the necessity of drinking, it is advisable, not to take any violent exercise shortly before dinner. To drink much at night, previous to our going to bed, is likewise hurtful. But the drinking immediately before a meal is more noxious than at any other time; because the stomach is thus filled with the liquid we swallow; the bile and the gastric juice there collected are too much diluted,

luted, and consequently the important office of digestion is checked. To drink much during the time of taking food, is also objectionable ; as the stomach is thus rendered incapable of receiving the due portion of aliment. Cold beer or water does not well agree with warm victuals ; and the teeth are injured by taking hot and cold substances in immediate succession. In the hot weather of Summer, it is scarcely possible to delay drinking till the dinner be finished ; and it is the more necessary, or rather the less hurtful, at this time, as the bile which serves to dissolve the victuals, then requires greater dilution. In Winter, unless we eat very dry and salted provisions, we feel less inclined to drink at table. But if we must drink in the intervals of eating, it would be most conducive to digestion to drink water only, which being drunk in small quantities, will not inundate the stomach ; and it is more proper during the time of eating, for this reason, that it agrees with all dishes without exception. Yet a glass or two of wine, during dinner, is proper and conducive to digestion. Some advise never to drink without eating something ; but he who drinks only when nature requires it, has no occasion to eat every time he drinks. Those, on the contrary, who are once accustomed to drink more than is necessary, or to make use of hot, stimulating, and intoxicating liquors, would do well to eat always some bread or other solid food along with them. Properly we ought to begin
drinking

drinking only after our appetite is satisfied, and then it should be done gradually during digestion. This function may be disturbed by large draughts of liquor, which occasion fermentation and flatulency.—Glass is the most proper substance for drinking vessels; for none but the fluoric acid will affect it.—For the sake of delicacy, as well as from a necessary precaution to health, every person at table ought to be furnished with a separate glass or other vessel for his drink.

Much drinking loads and oppresses the stomach, as it distends it too much; but it is not nearly so hurtful as too much eating. Every beverage relaxes the stomach; and persons whose bowels are not sufficiently elastic, should be careful in the quantity they drink; for an immoderate proportion of it may weaken digestion, dilute the fluids too much, and conduct the food too quickly through the alimentary canal. An undue portion of drink renders the mass of the blood too thin and watery; from a thin blood arises also a weak alimentary fluid, consequently a general debility of the body; and the urinary and other passages are thereby relaxed.

On the other hand, too little drink is equally improper; digestion is weakened; many parts of victuals remain undissolved, and are not conducted to the lacteals, because the proper means of diluting them are wanting; the blood becomes thick and viscid; finally, the secretions and excretions are

not

not duly performed, because the different canals are too dry and shrivelled.

II. *With respect to its Quality.*

There is as great a diversity among the articles contrived for beverage, as there is among those of food: water itself is of very different qualities, according to the particles with which it is impregnated, and the places from which it is obtained. That of wells, springs, rivers, lakes, swamps, and the various mineral waters, all differ in their sensible properties. Even cold and warm water produce different effects. The former, when moderately used, strengthens the stomach, and proves debilitating only when it is drunk in too large quantities. Warm water is always relaxing, and still more so when taken in quantity; it remains longer in the stomach than cold water, and consequently is more oppressive: cold liquor stimulates the stomach to contract, but warm drink diminishes its elasticity. If the stomach be overfilled with drink, and its elasticity weakened, a glass of strong wine, or other spirituous liquor, may remedy this inconveniency, and stimulate the stomach to contract. Water can only so far be called nourishing, as it supplies the aqueous parts we continually lose. It is the basis of all other liquids, and the greater a proportion of water they contain, the more fit they are to promote digestion.

Spring-

Spring-water originates partly from that of the sea, which has been changed into vapours by subterraneous heat, and partly from the atmosphere. As it is dissolved, purified, and filtered in a variety of ways, before it becomes visible to us, it is lighter and purer than other waters.

Well-water is more or less pure, according as it passes over beds of earth, which contain soluble, or at least minute particles. Wells sunk in a sandy soil are the purest, because the water is there most completely filtered. The more frequently a well is used, the better is its water; provided that no impure substances are introduced into it; for, the longer water stands unmoved, it turns the sooner putrid. Well-water, finally, may be most effectually purified by filtering it slowly through a quantity of sand and small pebbles; and still more conveniently by means of filtering-stones.

River-water is purer and more wholesome, if the river run over a sandy and stony soil; but if it pass over impure beds, or through towns, villages, and forests, from which many dirty substances are thrown into it, the water is rendered foul; as it is by fishes, amphibious animals, and plants. Lastly, the more rapid the course of the river, the easier it clears itself of feculent particles, and the water becomes purer.

Lake-water much resembles that of rivers, in its properties, but being less agitated, it is more impure.

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The water, which in cases of necessity is obtained from *swamps* or *ditches*, is the worst of all; because a great variety of impurities are collected in it, which in a stagnant water and a soft soil readily putrify. And, as the mere exhalations of such waters produce a pestilential atmosphere, it may be easily conceived, that the use of them must be attended with putrid and other dangerous disorders.

Rain-water is also impure, as it contains many saline and oily particles, soon putrifies, and consists entirely of the joint evaporations of animals, vegetables, and minerals, of an immense number and variety of small insects and their eggs, seeds of plants, and the like.—Rain-water is particularly impure in places filled with many noxious vapours, such as marshy countries, large manufacturing towns, where the fumes of metallic and other substances are mixed with the rain. In high and elevated situations, at a distance from impure exhalations, if no strong winds blow, and after a gentle shower, rain-water is then purest; because the vapours of the atmosphere have already subsided. In Summer, however, on account of the copious exhalations, rain-water is the most objectionable.

Snow-water possesses the same properties as rain-water, but it is less impure: both are soft, that is, without so many mineral and earthy particles as spring, well, and river-waters. Still purer is *hail-water*, as being produced in the higher regions of the atmosphere, and having a form, in which it
cannot

cannot easily partake of impurities. Lastly, *Dew*, as it arises from the evaporations of various bodies of the vegetable and animal kingdoms, is more or less impure, according to the different regions and seasons.

As the health of man depends principally on the purity and salubrity of the water he uses, we ought, where necessary, to deprive it of its pernicious qualities; and this can be done by boiling, filtering, and most effectually by distillation. The putrid substances in the water may be corrected by the addition of an acid. Thus, half an ounce of alum in powder will make twelve gallons of corrupted water pure and transparent in two hours, without imparting a sensible degree of astringency. By the addition of a very small quantity of quick-lime, water may be preserved from corruption on long voyages. To prevent water from corrupting at sea, add a small quantity of alkali and vitriolic acid to every cask, which will preserve it pure and wholesome for a twelvemonth. Charcoal-powder has also been found to be excellently adapted to check the putrid tendency of water, and for this reason the staves of the casks, used on shipboard, ought to be well burnt in the inside, to keep the water from corrupting. Vinegar, or other strong acids, are also well calculated to correct putrid water; and may be either mixed with it, or drunk immediately after, to prevent its bad effects.

Wine, that salutiferous liquor to the infirm and the aged, may be divided into *five* principal classes:

1st,

1st, The *sweet wines*, for instance, those of Hungary, Spain, Italy, Greece; the Malaga, Malmsey-Madeira, and Cape wines. If these be genuine; if they have not been adulterated by the addition of sugar or honey, &c. if they be properly fermented, they afford a true medicine to the weak and convalescent; they are, therefore, not proper for daily use.—The made wines of this country are, in general, liable to many strong objections.

2d, The *weakly acidulated wines*; such as old Rhenish, Champaign, those of the Mosel, of the Neckar, Franconia, and Austria; of these the Rhenish, Mosel, and Champaign wines are the best.

3d, The *acid and tart wines*, among which are most of the wines of Franconia, Thuringia, Saxony, Silesia, and some parts of Brandenburg. These wines, in general, are apt to occasion headaches, complaints of the stomach, and are besides of an unpleasant taste.

4th, The *acidulated sweet wines*, particularly those of France, as the common white wine and claret, provided that they be neither too old nor too new; and,

5th, The *sharp and astringent wines*, such as Port wine, Burgundy, the dry or hard kinds of Madeira, Sherry, and the like, which, on account of their heatening and binding nature, ought to be used chiefly for medicinal purposes.

There are a great variety of fruit-wines, which are fermented like wines from the grape; for
instance,

instance, the currant and raisin-wines, and also Cyder and Perry, which are properly wines of Apples and Pears. Cyder and Perry are, it is said, generally fermented and kept in leaden vessels, or at least the Apples and Pears are passed through leaden tubes; and the lead being readily dissolved by the acid, is gradually introduced into the body, which produces painful and dangerous colics, and frequently gives rise to the most desperate and incurable obstipations, among those habituated to the use of these liquors.

With respect to the constituent parts of wine, I shall only remark, that every kind consists of three principal ingredients, *water*, *alcohol*, or a pure spirit, and *sugar*. If these three substances could be so intimately combined as they are in wines, and if afterwards the proper aromatics were added, to impart to them the usual flavour, there is no doubt, but we could perfectly imitate every wine whatever. But the greatest obstacle to this speculation is the length of time, which wines require to arrive at a proper state of maturity, and which, in made wines, ought to be still further extended.

The more water the wine contains, it is the more suitable beverage at table, and is in some degree calculated to quench thirst. The strong wines, on the contrary, excite thirst, as they are drying, and affect the organs of secretion. As every kind of wine contains a greater or less quan-

tity of acid, it is an excellent antiseptic remedy, and hence it is given copiously in putrid ulcers and malignant fevers. Moderately used, it increases the circulation of the fluids, and extends the diameter of the blood-vessels; it promotes both the secretions and excretions, and invigorates all the functions of the body. Every motion is performed with greater vivacity, as is obvious from the additional lustre of the eyes. But the strength and vigour it imparts to the body, is of no longer duration, than while the wine remains in the stomach, before it enters into the mass of the blood, and while the stimulus received by the nerves of the stomach, is propagated to the brain. This explains the cause, that strong liquors are so easily intoxicating, when drunk upon an empty stomach. That wine operates on and through the stomach, is clear from experience; for an emetic taken immediately after it, will soon make a drunken man sober. But if its spiritous parts be communicated to the blood, so that fluctuations take place, the body becomes disordered, weak, and relaxed. It is only a stimulant, and not a permanently strengthening substance; for almost all wine-drinkers, who carry on that practice to any excess, die of relaxation and debility. There may, however, be cases in which an occasional excess of this kind is salutary; for instance, to a person who has been long sitting at study, or whose mind is depressed, and whose fluids are nearly stagnating: not unlike passion,
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sometimes serving to rouse the mind, and tempests to purify the atmosphere.

The *state of intoxication* is in every respect similar to that of incipient apoplexy or palsy.—Drunken men stagger in various directions, their tongue loses its powers of speech; they stammer, and see things double and moving in a circle. The mind is equally affected, and great imbecillity is the concomitant effect. All these partial palsies arise from the pressure of the blood-vessels on the brain, which are now furcharged with blood. If the intoxication has arrived at its utmost height, there is no longer any difference between this and the true apoplexy; all the other organs are paralysed, except the heart, which continues its action, and breathing is not suppressed. The imprudent sufferer is deprived of sensation, and if one of the smaller blood-vessels, that press on the brain with an unusual weight, should accidentally burst, he is in danger of instant death. But still more frequently does one of the pulmonary vessels burst, and occasion spitting of blood.

In drinking, too, much depends on the bodily constitution and other circumstances. Thus, people are soonest intoxicated in a cold place, where perspiration is checked, and when the blood is moving from the external to the internal parts. The same is the case, on an empty stomach, and this may be prevented by eating a little at intervals, particularly fat or oily substances. Indi-

duals of much sensibility and irritability, and persons after having taken violent exercise, are much sooner intoxicated, than those of a calm and a phlegmatic temperament.

For these reasons, a person much intoxicated ought to be carried without delay into a temperate room, and placed in a bed between the blankets, with his head raised, in order to promote the circulation of the blood, from the head and the internal organs towards the surface of the body and the lower extremities. All close bandages of the shirt and garters must be opened, and the feet, if necessary, bathed in lukewarm water, not exceeding the ninety-eighth degree of Fahrenheit. Plenty of tea and other diluent drinks ought to be given, and a gentle emetic is frequently of great service. After a good sleep, which has overcome the intoxication, the whole body feels weak and trembling; and the stomach particularly corrupted. In this situation, persons are generally troubled with much acid in the stomach, which may be removed by the absorbent earths, such as magnesia; after which, some sedative and strengthening remedies may be given, such as hot red-wine, negus, warm ale with ginger, strong coffee, and the like.

The copious use of wine, though not to a degree of intoxication, is exceedingly debilitating to the stomach, checking digestion, exciting diarrhoea, if white-wine, and obstructions, if port-wine be the favourite liquor; it makes the fibres dry and rigid;
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the cheeks and the whole surface of the body turn fallow, a symptom of bad digestion; the powers of body and mind are enfeebled, and dropfy or gout, and sometimes sudden death, are the consequences. Plethoric young men, and such as have weak stomachs and lungs, should not accustom themselves to the use of wine. To give it to children or infants, is a practice highly pernicious, except in very small quantities indeed. Upon the whole, wine should be used as a medicine only, if intended to produce salutary effects. To the phlegmatic, to the aged, and to those who are disposed to flatulency, and after fat meat, it is of the most beneficial consequence, if used with prudence and moderation.

As wine strongly promotes perspiration, it dries the body, makes it lean, and may therefore be of service to cold and phlegmatic, but not to plethoric constitutions. It stimulates the bile, and excites the appetite to a repetition of excess, so that people once habituated to drinking can but gradually return from this seductive practice. To drink wine copiously every day, is as improper and pernicious as to take medicines by way of diet: nothing is so much calculated to occasion habitual indigestion. And as wines are frequently adulterated with sugar of lead, and other poisonous ingredients, in order to remove a bad taste, and to render them more agreeable to the palate, I propose to bestow some attention on this important subject, in order to

enable the reader to detect such unlawful practices, which may expose our health, and even life itself, to the greatest danger.

Some of the adulterations of wine are rather harmless, others extremely dangerous. The common red-wines are frequently made of new, tart, and half-spoiled white-wines, by dying them with red sumach, and other woods or berries. In order to make wines stronger and more pungent, a variety of spices are employed, such as galangal, cardamom, mace, and the like; or an unfermented must, wort, or the mash for distilling spirits, are occasionally added, and allowed to ferment together with corrupted wines. To impart to wine the flavour of muscadell, the leaves of the *Horminum*, a species of Sage, (*Salvia Horminum*, L.) are often used; though it be a plant of a strong stupifying smell, and very pernicious effects. All adulterated wines, and what we call British wines, if drunk in any quantity, are more or less detrimental to health. For, even by the most innocent mode of preparing them in quantities, the manufacturers are induced to season them with spices of a heating and stimulating nature. But the most deleterious of all adulterations of wine, is that with the various preparations of lead, to give it a sweet taste. This infamous practice was carried on, some years ago, in Paris, to such an extent, that the Excise-office could not account for the prodigious increase of Vinegar entered at the city-gates. But it was at length

length discovered, that this vinegar consisted only of tart and corrupted wines, imported under the pretended character of vinegar, in order to avoid the high duty imposed upon wines, on their entrance into Paris: and sugar of lead joined to some absorbent earths, was employed to change these vinegars into sweet wines, which cost the lives of many thousand subjects. This secret, of the utmost importance to health and life, was confessed by a rich old wine-merchant, on his death-bed, to relieve, in some degree, his conscience.

Such adulterated wines operate like slow poisons; they first occasion headach, contraction of the throat, pain of the stomach, uneasiness, cough, difficulty of breathing; afterwards colics, and particularly the dry belly-ach, with continual obstipations, and at length palsy, convulsions, consumption, and death.—The brass-cocks also, which are by some people used to draw off wine or cyder, are of the most dangerous tendency; as they easily produce and mix their verdigrise with the liquor.

To detect adulterated wines, we must attend to the following particulars: every white or straw-coloured wine of a sweetish taste, afterwards astringent, and at the same time new; every wine that has an unusually high colour, not in proportion to its strength and age, or if it has the flavour of brandy, burns the tongue, or lastly, if it has an uncommonly strong flavour, may be justly suspected of being adulterated.—Red-wines, either of a very

deep, or a very faint colour; of a woody or tart taste; those which cover the inner surface of the glass, as well as the bottom of the bottles, with a red sediment, are generally dyed with some colouring substances. If such a wine be passed through filtering paper, the colouring particles will remain behind on the paper.

By the following method, we may easily discover, whether wines be adulterated or dyed, with burnt sugar, raisins, whortle-berries, and the like. A small phial must be filled with the suspected wine; the opening is stopped with the finger, and the phial, being inverted, plunged into a tumbler of water: the finger being withdrawn from the mouth of the phial, if the wine be adulterated, the substance with which this is done, will visibly escape from the phial and mix with the water; in so far at least, as the addition is heavier than water, which is almost generally the case. These adulterations, however, are of little detriment to health, as long as they contain no *metallic* particles. In order to discover these, we are possessed of an excellent chemical test, contrived by Prof. HAHNEMANN, in Germany, and known by the name of *Liquor vini probatorius*. It is prepared as follows: One drachm of the dry liver of sulphur, and two drachms of cream of tartar, are shaken in two ounces of distilled water, till it be completely saturated with hepatic air: the liquor is then filtered through blotting paper, and kept in a close stopped phial.

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From sixteen to twenty drops of this liquid are dropped into a small glass, filled with wine that is suspected to be adulterated. If the wine turn only thick with white clouds, and deposit no other but a white sediment, we may be certain that it contains no metallic ingredients whatever: but if it turn black, or even dark, if its colour approach that of a dark red, if it have first a sweet, and then an astringent taste, it is certainly adulterated with sugar of lead, or some other preparation of that metal, equally fatal. If, however, the dark colour be of a bluish cast, not unlike some pale ink, we may suspect the wine to contain iron in its composition. If, lastly, the wine be impregnated with copper or verdigrise, it will deposit a sediment of a blackish-gray colour.—This experiment ought to be made with a fresh-prepared test, and in the open air. It further merits attention, that white wines are very frequently coloured with burnt sugar and other vegetable bodies; they acquire a darker colour by being kept in oak casks, or by containing much tartar; and in all these cases they will be made somewhat darker by the above described test; but the sediment will not be of an uniform colour, and will consist only of some brown streaks.—It is well known, that all white wines must be impregnated with a small quantity of sulphur, in order to preserve them: if this be done in moderation, it is not detrimental to health; but if too great a proportion of sulphur be used, such wine occasions

great heat and thirst, it easily intoxicates, produces eruptions of the skin and face, headach, trembling of the limbs, and palpitation of the heart, hemorrhoidal complaints, gout, and a variety of nervous symptoms. Nothing is so easily discovered as sulphur; for by plunging a piece of silver, or even the shell of an egg, into an over-sulphurated wine, it will instantly turn black.

Wines are sometimes adulterated by mixing quick-lime with them, in order to produce a beautiful ruby-colour. If such a wine be poured into a tumbler, and allowed to stand for a day or two, a thin crust or pellicle will be formed on the top, by which the lime held in solution is detected. It is affirmed that such wines, if used for any length of time, bring on gouty and gravelly complaints.

The most innocent adulteration of wine, and perhaps the most frequent, is that with water. If a small quantity of wine be poured on quick-lime, and if the lime be slackened by it, the wine then certainly contains water. But if the lime be not slackened by it, the wine is pure and free of water.

Ardent spirits comprise all those liquors obtained by fermenting vegetable, and particularly the farinaceous substances, to a certain degree, and afterwards subjecting them to distillation. All distilled liquors consist of a great proportion of alcohol or pure spirit, a greater or less quantity of water, and generally of a very small proportion of an empyreumatic oil, especially if distilled once only, or if
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this process be carried on too quickly. Pure spirits are perfectly free from this oil, which, from its burnt and acrid nature, is altogether indigestible. Proof spirits ought to consist of 55 parts of alcohol, and 45 of distilled water in 100; but rectified spirits of wine ought to have only 5 parts of water in the hundred: the specific gravity of the former being as 930, and that of the latter as 835, to 1000.

The intoxicating effects of spirits are but too well known; if they be distilled over peppermint, balm, anniseed, or carraway, their strength is not much increased; but if over cinnamon, cloves, mace, or other hot spices, they are rendered still more heating, and pernicious to health.

If drunk in hot weather, or after violent perspiration, they check this function, by contracting the vessels of the skin, and closing the pores. On account of this contracting power, they are sometimes of service to those, whose stomach is overloaded with beer or water; to assist their passage through the proper excretories. After violent exercise and heat, a dram of spirits is more proper than cold water or beer, though a cup of tea or other diluent drink is preferable. After fat or otherwise strong food, spirits are exceedingly improper; for, instead of promoting the solution and digestion of food in the stomach, they rather tend to prevent it. We may be easily convinced of this, by attending to the effects they produce on inanimate substances: these are preserved from dis-
solution

solution and putrefaction more effectually in spirits, than in any other liquid. Thus we may learn, that spirits will check digestion, and render strong food taken into the stomach still more indigestible. Many persons are accustomed to take a dram as a remedy against flatulency. If the stomach be clean and uncorrupted, they will certainly be relieved by it; but, in the contrary case, their expectations will be disappointed.

Ardent spirits are rendered still more contracting, and burdensome to the stomach, when combined with acids, as in punch; and, for the same reason, the habit of taking drams after fruit, or any acid vegetables, is absurd. Notwithstanding the frequent abuse of spirits, they afford one of the most excellent antiseptics; but, if the human body be already replete with putrid humours, and troubled with frequent eructations, it is too late to cure it with brandy or gin. These liquors, however, are of considerable service to prevent the bad effects of a moist and cold atmosphere, of pestilential vapours, of very unclean occupations, of a damp military camp, and occasionally too, of a temporary abstinence from food.

To persons of relaxed fibres, distilled liquors may, under certain limitations, be useful, as they increase the elasticity and compactness of the vessels. But to those, whose fibres are already rigid, spirits are obviously pernicious, and have a tendency to make them prematurely old. They stop growth,
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and are otherwise very improper for young persons. That spiritous liquors increassate and coagulate the fluids, we may easily discover in those who are addicted to the use of them: they have a thick blood, are troubled with constant obstructions of the intestines, and their unavoidable consequences; such as a gradual depravation of the nervous system, loss of memory, debility of mind, and hypochondria, jaundice, dropsy, and at length consumption of the lungs. The throat and stomach of habitual tipplers are rendered callous, and at length almost closed, the glands are indurated, and consequently digestion is in the highest degree impaired.

Beer, considered according to its ingredients, consists of water, malt, and hops*; and in proportion to the quantity, quality, and manner of compounding them, it has received different names, and is possessed of various degrees of salubrity. The more water there is used in brewing beer, it is the better calculated to quench thirst; but less so, if it contain a great proportion of the mucilaginous

* Besides these ingredients, Brewers are apt to add a number of other articles, some of which are extremely noxious, and all prohibited by law. These are *Cocculus Indus*, Coriander Seeds, Alum, Liquorice and Liquorice Root, burnt Sugar, Treacle, Capsicum, Ginger, Copperas, &c. &c.—An useful Pamphlet has lately been published, called “*Every Man his own Brewer*,” detailing all this manufacture, and, at the same time, shewing practically, how any private family, or even lodgers, may make Porter and Ale in the smallest quantities, at less than half the expence at which, these articles are purchased.

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and saccharine principle of the grain. Strong beer, therefore, is very nourishing, and may be employed with advantage as a medicine, in emaciated habits. The greater or less addition of hops to the malt, furnishes us with bitter or sweet beer. The former kind is preferable as a medicine; the latter is more used as a common beverage; but it is apt to excite flatulency and diarrhœa. Hops, like other bitter substances, prevent beer from corrupting, strengthen the stomach, and dissolve viscid phlegm. Beer made of a great proportion of hops, and a small quantity of malt, is a good beverage, and well calculated to allay thirst.—There are great varieties in beer, accordingly as it is fermented; some kinds, such as those made of oats, in some parts of Germany, which are scarcely allowed to ferment at all, are very cooling in Summer, but quickly spoil; others are only half-fermented, such as the Dantzic spruce or black beer; others again to a sufficient degree, like our porter and ale; and lastly some, which are more than sufficiently fermented, such as Burton ale, and most of the strong home-brewed ales. All these are different in their effects, according to the various degrees of fermentation.

Every beer is inclined to ferment, on account of its constituent parts. If it be not properly fermented, this effect takes place in the stomach itself; the fixed air, being disengaged within the body, distends the stomach and bowels, occasions flatulency

lency and looseness. However, when drunk in small quantity, it is not attended with any great inconvenience, particularly in Summer, or in hot climates. It is used with great advantage at sea, against the greatest enemy of the mariner, the scurvy; those persons who have corrupted gums, that are painful and bleed on the least touch, ought to drink half a pint of wort, or unfermented beer, every morning and evening, and keep this liquor for a good while in their mouth; and they may promise themselves great benefit from this simple remedy.

Many consider beer or porter as excellent, when it foams much and makes a head, as it is called, on the top of the vessel; which is drunk by some amateurs with avidity, before it disappears. But this froth is not a proof of its good quality; rather of its imperfect fermentation, which is continued and completed in the stomach. It is likewise often artificially increased, by the addition of improper ingredients. The volatile vapour or gas, disengaged from such beer in the stomach and bowels, produces a quantity of stimulating and contracting air, by which the alimentary canal is almost at the same time expanded and contracted, so that the most dangerous spasms and colics may arise from thence. Such beer farther emits a quantity of sulphureous vapours; and for this reason it is attended with danger to go into cellars, where it is kept in a state of fermentation; on the sudden entrance

trance into such places, a candle will often be extinguished by the vapour, which is sometimes so noxious as to suffocate persons going in.

If bottles filled with beer, ale, or porter, are not soon enough corked, it turns flat or sour, acquires an unpleasant taste, produces flatulency, colics, and spasms. If bottled and corked in proper time, the gas which it ought to contain is not dissipated; its agreeably pungent taste is preserved, and it is then a very excellent and nourishing liquor, which allays thirst, and does not affect digestion, like wine.—A person who has a good appetite, and takes nourishing food, requires no beer for its digestion; and, by drinking it, he is exposed to plethora, or a full habit, and all the attendant complaints. Those, on the contrary, who take a great proportion of vegetable food, and have a weak stomach, will find a strong and bitter beer rather useful.

As every new sort of beer is not equally grateful to the stomach, we would do better to desist from using a beer, to which we cannot habituate ourselves in the course of two or three weeks. On account of the great variety of this liquor we meet with in travelling, it is much better to drink no beer at all on journeys, and to use instead of it lemonade, in hot weather, and wine or spirits mixed with water, when we travel in a damp and cold season.

Beer, in general, is nourishing, and has a tendency to fatten such individuals, as are of dry and rigid

rigid fibres, and whose bile is in good order. Hence the inhabitants of countries, in which beer is the principal beverage, are commonly more phlegmatic and indolent than those of wine-countries. Many sorts of beer, however, in which a greater than usual proportion of grain is used, contain much spirit, and are on that account of a heating and intoxicating nature. Such is, for instance, our Burton and several other ales, and all the strong kinds of foreign beer.

A light and well-fermented beer is a wholesome and, at the same time, diluent article of nourishment. With people already plethoric, or disposed to become corpulent, the lightest beer generally agrees best. Thick and nourishing beer is of service to wet nurses and the debilitated. Sweet beers are only nourishing, but all the bitter kinds are strengthening also. The latter are of service in a weak state of digestion, and to people troubled with acid on the stomach; but sweet beer is more wholesome for daily use, and at the same time less exposed to dangerous adulterations. Upon the whole, beer is no proper beverage to people of a thick, black-bilious blood, and with a disposition to melancholy: it is the most useful species of drink to the weak, the lean, and the laborious; provided they are not very subject to flatulency, nor troubled with diseases of the breast. In both of these cases, I have found it uniformly to disagree, and to be much inferior in salubrity to water.

A moderate use of fermented or distilled spiritous liquors is far less hurtful to the human constitution, than the habitual and excessive drinking of warm liquors. *Tea*, the common favourite among all ranks, if taken regularly twice a-day, and in large portions, is attended with bad consequences. It thoroughly relaxes the coats of the stomach, weakens the bowels, predisposes them to flatulency upon the least occasion, and destroys all the energy of the digestive organs. These effects, however, are not so frequent, nor indeed to that extent, if the tea be drunk strong, and sufficiently diluted with milk, and sweetened with sugar: it is chiefly the warm water, which renders the tea of the common people so destructive to the constitution, as they generally make up the quality of the tea by the quantity of water. This herb, which has employed the pens of so many eminent writers, still deserves some attention; as the nature and properties of it are but imperfectly understood. It certainly is an aromatic, slightly astringent, and somewhat narcotic plant. Whether it possesses any diuretic, diaphoretic, and other virtues, for which it has been celebrated, is rather doubtful; as these may be in part owing to the great quantities of warm water, with which the infusions of it are made. Good tea, particularly the black sort, in moderate quantity, and made strong enough, is antispasmodic and refreshing. It is, therefore, calculated to relieve the cramp of the stomach, and
pains

pains of the abdomen, if they proceed from flatulency. But, according to circumstances, it may even increase the cramp of the stomach, for instance, if it arise from a vitiated bile, from worms, from hysteric and gouty complaints; in all which cases tea will'most certainly not relieve, but rather prolong the spasmodic contraction of the vessels. The relaxation which tea occasions in the first passages, renders it peculiarly hurtful to females of lax fibres, a thin blood, and irritable habits. To enumerate the great diversity of nervous symptoms, attending its abuse in such constitutions, would lead me too far from the prescribed limits; but so much is certain, that the vapours arising from liquors drunk very hot like tea, weaken the lungs, dispose the votaries of them to frequent colds and catarrhs, which readily make a transition into consumptions.

Individuals of a rigid and solid fibre, of a dry and firm body, may be allowed to drink tea in moderation, as it will not easily hurt them. By adding a table-spoonful of old Rhenish wine, or ardent spirits, to every cup of tea, it may be so far improved, as to make it less flatulent; but the frequent repetition of it, even in this form, must be detrimental to the body. A moderate use of tea may be sometimes of service to persons in a perfect state of health; yet, for daily use, it cannot be recommended. It no doubt produces a gentle stimulus, and rouses the mind for a short time;

hence it is perhaps the best and safest remedy after violent heat and fatigue of the body. As the means of increasing perspiration, tea is an useful beverage to travellers in cold weather, when insensible perspiration is liable to be checked.

Hypochondriac and hysteric people, however, are much deceived in the use of tea, as a diluent drink; for all the evils arising from relaxation, a weak stomach, and flatulency, under which such persons usually labour, are, by the habit of drinking tea, increased to the most alarming degree. The *cold* stomach, which they propose to *warm* by it, is a mere phantom of the brain; for this sensation of cold is nothing but relaxation, which cannot be removed by hot liquors, but is made worse by every repetition of them.

It would be a great proof of a patriotic spirit in this country, if the use of this exotic drug were either altogether abandoned, or, at least, supplied by some indigenous plants of equal flavour, and superior salubrity. The Chinese have good reason to smile at our degenerated taste, when they are informed, that we actually possess an immense variety of the most valuable aromatic plants, much better calculated by nature to benefit our stomachs, and to revive our spirits, than what we purchase from them at great expence. These sentiments may be ungrateful to East-India merchants, or European tea-dealers; but every honest truth should be told to an unbiassed, though deluded public.

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There is no doubt, that it would be more conducive to our health, if we could leave off altogether, at least when in a state of health, the use of warm liquors. But, if this practice must be indulged in, we ought rationally to choose the herbs growing in our own meadows and gardens, instead of making ourselves tributary to distant nations. With this intention, the late Dr. Solander introduced his *Sānative Tea*; not with a view of making it a secret or quack-medicine, under which character it is now sold in this country, but of recommending the use of it to those individuals who require diluent liquors, and to the heavy, sluggish, and phlegmatic. Dr. Tissot had before recommended the stalks of cherries, and the leaves of peach and almond trees, to the poor people of Switzerland, as substitutes for tea; but we possess a variety of plants infinitely superior to these, of which I have myself occasionally made trial. I shall divide these into three classes; namely,

1st, The strong, spicy, and balsamic plants, such as balm, peppermint, sage, and the like.

2d, The strongly aromatic flowers, among which those of the *Rosa pimpinellæ folia* (or the rose whose leaves resemble those of the Burnet-saxifrage) and the wood-rose, or the *Asperula odorata*, L., deserve the first place, and far excel in flavour all the teas imported from China; lastly,

3d, The mild aromatic leaves and blossoms of trees and shrubs, for instance, the blossoms of the

lime-tree and the black thorn, the leaves of the peach and almond-trees, and particularly the first tender leaves of the *whortle-berries*, or the *Vaccinium Myrtillus*, L., which cannot be distinguished from real tea, when properly gathered, and dried in the shade.

After having pointed out the best substitutes for Indian Tea, I cannot suppress my earnest wish, that even these indigenous vegetables might not be abused, by making them the customary vehicle of warm water, and thus to injure the stomach, the lungs, the nerves, and the whole human frame. I cannot better conclude this important article, than by repeating the prophetic words of an experienced physician.—“ Tea,” says he, “ will induce a total change of constitution in the people of this country. Indeed it has gone a great way towards effecting that evil already. A debility, and consequent irritability of fibre, are become so common, that not only women, but even men are affected with them. That class of diseases, which, for want of a better name, we call nervous, has made almost a complete conquest of the one sex, and is making hasty strides towards vanquishing the other.” And Dr. Buchan emphatically concludes: “ Did women know the train of diseases induced by debility, and how disagreeable these diseases render them to the other sex, they would shun tea as the most deadly poison. No man can love a woman eaten up with vapours,

vapours, or washed down with diseases arising from relaxation."

Coffee is a decoction of the well-known Bean or Berry of that name, roasted and ground into a powder. The bitter and astringent powers of the beans, in some measure, correct the bad properties of warm water; but if they be too much roasted, their empyreumatic oil is expelled, and they acquire an insipid taste. If, on the other hand, they be not sufficiently roasted, this burnt oil is not evolved to the surface of the bean, and the coffee acquires a bitter and unpleasant flavour. This beverage is generally considered as strengthening to the stomach. It promotes digestion, dispels flatulency, removes vertigo and torpor, exhilarates the mind, increases the circulation of the blood and insensible perspiration, attenuates viscid humours, is diuretic, and sometimes gently aperient. These properties of Coffee, being, in a great measure, confirmed by experience, justly make it a valuable medicine, which, in particular, is eminently qualified to cure the most troublesome headaches, provided they originate from the stomach, or from a bad state of concoction. Coffee drunk after dinner has a tendency to promote digestion. Agues, diarrhœas, and giddiness, have been frequently removed by it. On account of its subtle oil, it stimulates the solids, rarefies the blood, is of particular service to females of a sedentary life, and to those who suffer from phlegmatic and catarrhal diseases. But, if too

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strong, it affects the nerves, by its penetrating property, often occasions sleeplessness and trembling of the hands; but, in some phlegmatic and indolent individuals, it is apt to excite sleep.

If the coffee be not used merely as a diluent for relaxing the fibres, it ought to be made strong. The most proper proportion is, one ounce of well-roasted and ground coffee to one pound or one pint of water, which should be just allowed to boil up: for it is a mistaken notion to keep it long boiling; the longer it is boiled, it loses the more of its volatile and aromatic particles, consequently turns weak and flavourless.—As coffee is possessed of excellent antispasmodic virtues, it is a favourite drink with the hypochondriac and the hysteric. According to early observation, it is also the best and most effectual remedy in spasmodic asthma. The steam of boiled coffee has frequently been beneficial to weak eyes. If drunk in the morning, and immediately after dinner, of a proper strength, and not above one, or two small cups, it is a wholesome substitute for tea or spirits, particularly to persons in a good state of health, and to such as are not habitual wine-drinkers, or of a very irritable temperament.—Lastly, the Coffee of the Levant far excels that imported from the West Indies, which, besides, is frequently steeped in Sea-water, in order to make it weigh more. This fraudulent practice may be easily detected, by soaking the raw coffee-beans in water, and examining the taste of it.

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An *immoderate* use, however, of this decoction is hurtful to the healthy, and destructive to the diseased: it debilitates them still more, by causing great undulations in the blood, trembling of the limbs, giddiness, and a certain insupportable timidity. It leads people of a sanguine temperament, and particularly females, to the long train of all the fashionable nervous diseases. It frequently excites a disagreeable eruption in the face, and brings on many troublesome disorders, occasions bleedings of the nose, and sometimes blood-spitting, induces frequent hemorrhoids, a hectic cough, at last consumption, and death.—If coffee be drunk after dinner, with a view to promote digestion, it requires no milk to dilute it, and render it weaker: but, if it be used for breakfast, some milk or cream is necessary, to sheath or neutralize the empyreumatic oil it contains, which fires the blood, and occasions violent flushings, accompanied with choleric sensations,

All the kinds of mock coffee, made of rye, wheat, peas, dried carrots, beets, the succory-root, and the like, have little resemblance to it, other than what they acquire by their burnt taste and empyreumatic oil. A coffee made of acorns is much recommended in asthmatic and spasmodic complaints; but as these fruits contain an uncommon quantity of the oil, which is so dangerous and heating to the blood, too much circumspection cannot be employed in the use of it. From my

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own experience, I recommend to begin with adding about one eighth, then one sixth, and gradually a greater part of the burnt acorns to the coffee, till at length they may be used half and half.

Chocolate, especially when boiled with milk and eggs, is uncommonly nourishing: but the spices mixed up with it, such as cinnamon, cloves, musk, vanilla, and the like, make it more heating and less wholesome. Vanilla, which we always find in the Spanish Chocolate, is an extremely volatile and pungent aromatic; even its flavour is frequently insupportable to hysteric and hypochondriac persons; it occasions violent headach, trembling, giddiness, and other symptoms, usual in these complaints.—The common chocolate, prepared with sugar, eggs, milk, and water, is the most nourishing and wholesome. But, a too frequent and immoderate use of it is always hurtful, particularly to the individuals before alluded to, as the cacao is too fat and indigestible to them, and creates a false or forced appetite. *Cacao*, of itself, is less heating and lighter than if made into chocolate, but it is not so nourishing. The immoderate use of this oily beverage is apt to induce a febrile state in young people, and to overload the sedentary with too much nourishment; and it frequently brings on, like coffee, a state of irritability and uneasiness. To the corpulent and weak it is improper, and if they be otherwise immoderate in eating,

eating, they are hastening to contract inflammatory diseases and apoplexies. With persons much employed in mental pursuits, it also disagrees; and those who imagine to supply their losses, sustained by nocturnal debaucheries of whatever kind, will find themselves disappointed in their hopes: by continually drinking chocolate, and using other nutritive substances, they will, indeed, be stimulated to commit new irregularities, but at the expence of their palsied nerves, and their broken frame. In children threatened with a wasting, or *tabes dorsalis*, as likewise in some kinds of consumption in adults, Chocolate, with a sufficient quantity of milk, may be serviceable; but even in these cases a strong decoction of roasted oatmeal in milk, with a small addition of chocolate, is much better calculated to answer every useful purpose.

Punch is a well-known beverage, the composition of which requires no description, as it may be made of every kind of spiritous liquor, diluted with water, acid, and sugar. If a proper quantity of acid be used, it is an excellent antiseptic, and well calculated to supply the place of wine, in resisting putrefaction, especially if drunk cold and with plenty of sugar: it also promotes perspiration; but, if drunk hot and immoderately, it is liable to create acidity in the stomach, to weaken the nerves, and to give rise to complaints of the breast. After a heavy meal it is improper, as it may check digestion, and injure the stomach.

Negus

Negus is one of the most innocent and wholesome drinks, especially if Seville oranges be added to red port-wine, instead of lemons; and drunk moderately, it possesses considerable virtues in strengthening the stomach; but, on account of the volatile and heating oil in the orange-peel, *negus*, if taken in great quantities, is more stimulant and drying than the pure wine itself. People troubled with the hemorrhoids, and diseases of the breast, should not indulge themselves in this, nor in the preceding species of drink.

Of Spices.

Spices, of themselves, are not strictly nourishing, but are used merely to improve the taste and flavour of substances, or to promote their digestion. Some spices, being extremely volatile, and occasioning too strong a stimulus, do more harm than good. The most conducive to health would be the indigenous spices, though some of the foreign kind have now become indispensable in our present mode of living. The most common, and perhaps the most useful, are :

1. *Salt*. It corrodes the fibres of plants and animals, it disorganizes the connection of parts too firm for the solution of the stomach, it dissolves the glutinous parts, and renders them fit for being the easier diluted by boiling, and the better digested by the stomach. Provisions of a tough
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and viscid consistence, therefore, require much salt; for instance, beef, mutton, fish, peas, beans, fat, and the like.—Hence, salt-beef and herrings agree so well with vegetables, because the abundance of salt in the former seasons the latter. But too copious a use of salted provisions is extremely hurtful; they weaken the solid parts, make the blood thin, acrid, and disposed to putrescency; so as to be productive of scurvy in all its stages, eruptions of the skin, consumptions, and other disorders.

2. *Sugar* is at present one of the first necessities of life. It is unfounded, that sugar renders the blood thick or viscid; on the contrary, it is possessed of diluent and attenuating properties. The nervous and hypochondriac, however, cannot easily bear this, or any other sweet substances. If moderately used, it promotes digestion, being a gently solvent and stimulating salt. But, where people take it without moderation, sugar may prevent digestion, not on account of its substance, but by obstructing the assimilation of food, so that it produces slimy and acid matters in the alimentary canal. The tolerably strong acid, which sugar contains, renders it an excellent remedy to resist putridity. The finest sort of sugar being freed of all impurities, is the best and most wholesome. Yet, in sore throats and other catarrhal affections, I would prefer sugar-candy or moderately fine lump-sugar, to that which is double refined, on account of some particles of lime

lime and clay, necessarily remaining in the latter, from the manner in which it is prepared.—Other sweet substances, such as honey, cannot altogether supply the use of sugar, as they are not possessed of the same properties; but there have been already made some very successful experiments with the American maple-tree, (*Acer saccharinus*,) which afford great hopes, that we may obtain this valuable and indispensable spice, in future times, from that quarter of the globe, in sufficient quantities, and at a reasonable price, when the most flagitious of all trades, that in human flesh, shall have been entirely abandoned.

3. *Honey* contains an acid like sugar, but many more inflammable particles; it easily ferments, and therefore occasions flatulency. In some particular habits, it is apt to occasion gripes and looseness: as a medicine, it is useful to the asthmatic, to promote the expectoration of tough phlegm; and so far it is an useful detergent and aperient. But, as an article of diet, when immoderately used, it is hurtful to weak stomachs, and ought to be avoided by people whose humours incline to putridity; and who are troubled with too much bile.

4. All kinds of *Pepper*, being strongly heating and stimulating, should be used with precaution. Yet, its peculiar warming and stomachic powers make it an excellent spice, to be used with fat, tough, and smoked meat, with flatulent vegetables, with the cooling cucumbers and melons, as well

well as with fish and other articles of difficult digestion. Pepper ought, for these purposes, to be only coarsely ground. If taken in whole grains, it imparts to the stomach only a small part of its virtues; and cannot be reduced in digestion. In this form it is an old and effectual domestic remedy of the Germans, against viscidities in the stomach, flatulency, weak digestion, and consequent giddiness. For these purposes, from six to ten pepper-grains should be swallowed in the morning, on an empty stomach. Yet I would not advise this practice to be followed, except to some very vitiated stomachs, accustomed to spices and spiritous liquors, with whom the pepper may serve as a substitute for drams.

5. *Cubebs*, *Cardamoms*, *Vanilla*, and *Cloves*, are hot, pungent, and on that account improper for daily use.—*Cubebs* are much inferior in pungency to pepper.—*Cardamoms* are a warm and grateful aromatic; they do not, like those of the pepper kind, immoderately heat and inflame the bowels; hence they certainly deserve the preference for common use.—*Vanilla** is warming, resolvent,

* *Vanilla* is the pod of the *Epidendrum*, L. growing in Cayenne and some parts of Spanish America. The pods are sometimes six inches long, narrow and almost triangular, soft, very oily, externally of the appearance of leather, and internally filled with a dark brown pulp, in which we find a great number of small black or brownish red and shining seeds. These have a pungent aromatic and oily taste,

resolvent, strengthening the stomach, and expelling flatulency. In chocolate, it assists the digestion of the oily substance of the cacao.

Cloves are hot and stimulant aromatics, but formerly seldom obtained genuine in this country, as the Dutch frequently mixed them with other cloves, previously robbed of their essential oil by distillation.—*Mace* and *Nutmeg* are less heating, and therefore less pernicious for common use; but the former is still more so than the latter, which are supposed to have an astringent virtue, and are employed with that intention in diarrhœas and dysenteries.—*Cinnamon* is undoubtedly the most elegant spice, but seldom obtained pure from the mercenary Dutch, who were accustomed to send us more Cassia than real cinnamon. The *Cassia* bark, however, resembling that of cinnamon in taste, is much less heating, and certainly more serviceable for common use than cinnamon, which is better calculated to answer medicinal purposes. The bark of cassia is of a thicker and coarser appearance; it breaks short and smooth, while the cinnamon breaks fibrous and shivery.—*Pimento*, or Jamaica-pepper, resembles in its smell a mixture of cinnamon, cloves, and nutmeg, whence it has

taste, and a strongly balsamic odour, much resembling that of the Peruvian balsam. A very small portion of these seeds, for instance, a grain to an ounce, is sufficient to impart to the Chocolate a very agreeable flavour, which we generally meet with in that imported from Spain or Milan.

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received the name of *all-spice*; it is milder than the East-India pepper, and is an useful addition to broths and stewed dishes, when employed, as it ought to be, in whole grains.—*Ginger* is one of the most elegant and wholesome spices, especially boiled whole in beer, drunk by people moving in the open air and cold weather. But this spice, as employed by the bakers for ginger-bread, does a great deal of mischief to the stomachs of children in particular; though it may be occasionally of service to travellers in the early morning, on an empty stomach*.—The indigenous spicy and balsamic herbs, such as *parsley*, *marjoram*, *thyme*, *sage*, and the like, cannot be too much recommended for culinary use, especially in broths; as they are well calculated, by their aromatic virtues, to assist the digestion of many strong articles of food, which daily cover our tables; and these excellent herbs are not liable to the adulterations, with which most of the foreign spices are vitiated.

6. Among all the native spices, there is none, in my opinion, which excels, in medicinal virtues, the common *Carraway*. The seeds of this plant are the mildest and most useful carminatives we

* If the bakers knew, what the substance is, with which they gild its outside, to invite children to eat their ill-contrived ginger-bread, I venture to hope they would desist from so pernicious a practice. This gold leaf, or Dutch gold, is actually manufactured of brass or copper, one of the most virulent metallic poisons.

possess. To people of a weak digestion, troubled with flatulency and colics, they afford the most certain relief, if used in sufficient quantity; for instance, a table-spoonful at a time, early in the morning, and one hour before a meal: or still better, if these seeds are plentifully used in bread, and among cooked victuals. Yet here, too, I must caution those of a hot and bilious temperament, as likewise the individuals liable to obstructions and habitual costiveness, not to use these seeds indiscriminately, and without consulting a professional man.

Finely pounded carraway-seeds, with a small proportion of ginger and salt, spread upon bread and butter, and eaten every day, especially early in the morning, and at night before going to bed, is successfully used in Germany as a domestic remedy against hysterics, and will, no doubt, effectually remove such symptoms, provided they do not arise from improper diet, obstructions of the intestines and other vessels, passion, bile, acrid humours, and the like; in all which cases the carraway and ginger will certainly do more harm than good; as each of these causes must be removed by the apposite means.—If, however, carraway be kept in a state of powder, for the purpose of overcoming the disposition to flatulency and indigestion, it soon turns rancid, and may prove hurtful, on account of the strong oil it contains.—The plant of carraway itself is one of the early spring-herbs,
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and makes an excellent addition to salads. The seeds, when distilled with ardent spirits, evolve a very heating and pernicious oil, which renders such spirits still more detrimental to health, than they are in a pure state.

CLASSIFICATION

Of the various Articles used as Food, Drink, and Spices, according to their individual salubrity.

I. FOOD.

Division First.

Alimentary substances containing wholesome fluids.

CLASS I. Articles affording strong nutriment.

ORDER I. Vegeto-farinaceous substances.

Genus i. With soft juicy fibres.

1. *Such as contain a saccharine matter ; as the skirret or sugar-root (Sium Sisarum, Linn.), the common carrot, beet, and polypody-root (Polypodium vulgare, L.).*
2. *Sweetish substances affording a tender farina or meal ; as the parsnip, the turnip-rooted cabbage (Napobrassica), the colewort (Caulis rapicius), viper's grass (Scorzonera, L.), the goat's-beard, or falsafy (Tragopogon*

pratense, L.), the Solomon's seal (*Convallaria Polygonatum*, L.), parsley-root, asparagus, turnips, and potatoes.

Genus ii. Substances affording flower, or those of a viscous earthy consistence; viz. all species of grain, as wheat, rye, barley, oats, buck-wheat, millet, maize, or India-corn, the chickling-vetch (*Lathyrus tuberosus*, L.), and the like.

ORDER II. Gelatinous animal substances.

Genus i. Of a soft and juicy muscular substance; viz. veal, lamb, young beef, mutton, pork, venison, turtle, hare, rabbits, badgers, domestic fowls, pheasants, partridges, the greater number of land-fowl, oysters, small lobsters, and fresh eggs.

Genus ii. Of a hard and tough consistence; viz. all the animals before mentioned, when old; as well as the bustard, the starling, the woodpecker, the sparrow, the goose, the duck, the lapwing, muscles, snails, crabs, hard boiled eggs, &c.

ORDER III. Fat or butyro-oleaginous substances.

Genus i. Of the sweet kind; viz. cacao, sweet almonds, walnuts, hazel-nuts, water-caltrops, chesnuts, beech-nuts, cashew-nuts (*Anacardia*), pistachio-nuts, wild pine-apples (*Karatas*), milk, and fresh cheese.

Genus

Genus ii. Of the bitterish and tart kind; viz.
bitter almonds, acorns, all the seeds of fruit,
and olives.

CLASS II. Weakly nourishing substances.

ORDER I. Those of a viscid and watery consistence, or whose vegetable mucilage is diluted with much water.

Genus i. Of a sweet taste; viz. melons, and many species of pears and apples, sweet citrons, lemons, oranges, figs, mulberries, raspberries, sweet grapes, cherries, and plums, jujube-berries, dates, &c.

Genus ii. Of a sweetish taste; viz. Green peas and beans, white cabbage, cauliflower, spinach, orach, blite or strawberry-spinach, cucumbers, and gourds.

Genus iii. Of a compound sweet and bitter taste; viz. the succory, the rampion (*Phyteuma*, L.), the borage, the saw-wort (*Serratula*, L.), the young shoots of hops, the sow-thistle (*Sonchus*, L.), the hedge-mustard, artichokes, capers, the brook-lime, endives, and lettuce.

Genus iv. Of a mildly sweetish and spicy taste; viz. celery, angelica, shepherd's-needle (*Scandix cerefolium*, L.), fennel, and the common balm (*Melissa officinalis*, L.).

Genus v. Of an acrid taste; viz. radishes, turnip-radishes, horse-radishes, tarragon

(*Artemisia Dracunculus*, L.), scurvy-grass, and rue.

Genus vi. Of an acid taste; viz. sorrel (*Rumex acetosa*, L.), purslane (*Portulaca*, L.), four citrons, lemons, limes, cherries, plums, &c.

Genus vii. Of a vinous quality; viz. all sweet apples, particularly rennets, apples of Borsdorf, and some few varieties from America; the pine-apple (*Ananas*), the honey or paradise-apple, shaddocks or sinapples, bramble-berries, straw-berries, whortle-berries, gooseberries, currants, grapes, apricots, peaches, and nectarines.

Genus viii. Of a tart and astringent taste; viz. all the wild-growing apples and pears, quinces, cran-berries, red whortle-berries, bar-berries, the green summer and winter pears, four apples, medlars, the fruit of the dog-rose or hip-tree, and of the service-tree, sloes or the fruit of the black-thorn, and the green Brazilian plums.

ORDER II. *Those of a gelatinous watery consistence.*

To this order belong all the various species of fishes.

Division Second.

Alimentary substances containing unwholesome fluids.

ORDER I. Those of an acrid nature.

1. *Coarsely viscous and saline substances* ; viz. all salted and smoked animal food, both of quadrupeds and fishes.
2. *Putrescent, or easily putrescible substances* ; viz. the ram, the he-goat, the bull, the otter, water-fowls, the blood of animals, roasted eggs, tainted eggs, and lastly all the flesh of wild and tame animals kept too long, with a view of making it more tender.
3. *Substances of a furry and leathery appearance, or such as discover a suspicious acrimony* ; viz. truffles, morels, and all kinds of mushrooms.

ORDER II. *Those of gross fluids, or a coarse earthy consistence* ; namely, the various fruits obtained in hulks, such as dried peas, beans, lentils, and the like.

II. DRINK.

(A) Watery Liquors.

- I. *Simple or uncompounded* ; namely, all kinds of common water.

II. *Mucous-watery-spiritous.*

1. All *fermented* liquors known under the name of beer or ale.
2. *Spicy-balsamic* liquids; such as the vernal sap of the birch and maple-trees, as well as the artificial preparations of tea, coffee, and chocolate.
3. *Sweetly-acidulated*; namely, lemonade, orgeat, mead, must, and the like.

(B) Spiritous Liquors.

I. *Distilled*: namely, all kinds of ardent spirits, from whatever grain or vegetable substance they may be prepared.

II. *Fermented*: All kinds of Wine.

1. *Sweet wines*; those of Hungary, Spain, Italy, Greece, and the Cape wine; as likewise all wines made of currants, raisins, &c.
2. *Slightly acidulated wines*; among which Champagne, Rhenish wine, or old Hock, and that of the Moselle, are the principal.
3. *Acid and tart wines*; to which chiefly belong the wines of Franconia and Saxony.
4. The *acidulated sweet wines*; such are most of the French wines, and particularly Claret; and, lastly,
5. The *sharp and astringent wines*; the chief of which are the wines of Oporto and Burgundy.

III. SPICES.

III. SPICES.

1. Of the *sweet* kind ; such as sugar, honey, manna, and the inspissated sap of the maple and beech-trees.
2. Of the *acid* kind ; namely, the juice of citrons, lemons, unripe grapes, &c.
3. Of the *saline* kind ; namely, common salt, whether obtained in a solid form, as rock-salt, or from the evaporation of the sea and salt-springs. Lastly,
4. Of the *pungent and balsamic* kind ; such as garlic, shalot, onions, chives, nutmeg, mace, pepper, pimento, cubebs, vanilla, cardamoms, bay-berries, juniper-berries, ginger, calamus, cloves, cinnamon, saffron, caraway, coriander, fennel, parsley, dill, sage, marjoram, thyme, penny-royal, mugwort, hyssop, peppermint, and rue.



C H A P. VI.

Of EXERCISE and REST; their respective advantages and disadvantages explained; their manner and limits ascertained; together with directions for regulating both.

MOTION, or bodily exercise, is necessary to the preservation of health, which is thereby promoted, so long as the bounds of moderation are not exceeded. Too violent exercise, and a total want of it, are attended with equal disadvantages. Much also depends on the kind of motion, and the various postures of the body.

The essential advantages of exercise are the following: bodily strength is improved; the circulation of the blood and all other fluids promoted; the necessary secretions and excretions are duly performed; the whole mass of the blood is cleared and refined, so that it cannot stagnate in the minutest capillary vessels; and if any stoppage should begin to take place, it will be effectually prevented. That exercise is enjoined by nature, we may learn from the whole structure of the human body, from the number of muscles formed for motion, and from the mechanism in the circulation of the blood itself. There are, indeed, no healthier people than
those

those who have continual strong exercise. Man in a state of health is spontaneously induced to take exercise; and children that are perfectly healthy, are constantly running about, and in almost uninterrupted motion.

But if exercise, either by its violence, or too long duration, go beyond the proper limits, it naturally quickens both respiration and the circulation of the blood, which may occasion the bursting of small blood-vessels, miscarriages, inflammations, and congestions of blood towards certain parts of the body, such as the heart and the brain. The saline acrimony of the fluids is thus more disengaged, the fat is melted; inflammatory fevers, hemorrhages, and palsies, may be the consequences. Violent exercise is particularly hurtful to those who are not accustomed to it, or who have committed excesses in drinking, and, what is still worse, in eating, more than is necessary: and those whose bodies have not been sufficiently nourished by food and drink, may also be injured by too much exercise.—The sudden transition from a state of rest, to violent action, is likewise hurtful, and still more so in hot than in cold weather. After strong emotions of the mind, every species of bodily exercise ought to be avoided, till the tranquillity of mind return with rest of the body; yet we ought to guard against the effects of cold, as it may prove extremely prejudicial in such a situation.

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With respect to the manner of taking exercise, three principal points are to be attended to :

1. As to the *kind* of exercise,—the various species of which may be aptly divided into *active* and *passive*. The active are of a very diversified nature; *walking, running, leaping, swimming, riding, fencing*, the *military exercise*, different sorts of *athletic games*, as well as every other kind that requires muscular exertion.—*Passive* exercise comprises *riding* in a carriage, *sailing, friction, swinging*, and the like. The more active species of exercise are beneficial to youth, to those of a middle age, to the robust in general, and particularly to the corpulent, the plethoric, and those whose evacuations are not in due proportion to their supplies. The passive kinds of exercise, on the contrary, are better suited to infants, to old, dry, and emaciated persons, to the tender and debilitated, and particularly to the asthmatic and consumptive.

2. As to the *time* in which exercise is most proper to be taken—this depends on so great a variety of concurrent circumstances, that the rules by which it may be regulated, cannot be universal, and must therefore be collected from the preceding observations on the properties and effects of Air, of Food, Drink, and so forth.—Other particulars, such as relate to greater or less fatigue attending the different species of exercise, the utility of it, in certain states of the mind and body, must determine this, as well as

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3. The *duration* of it ;—for, it is next to impossible to lay down positive rules, how long every individual, in every particular situation, may continue a certain species of exercise, so as to derive advantage. These rules, as far as they can be established, may be collected from the subsequent remarks, and then applied to the particular kinds of exercise, by which we may be benefited in individual cases and situations.

It is necessary first to observe, that any kind of exercise, which we are accustomed to take, with a view of bracing the body, is far preferable to an unusual one, which may be attended with a contrary effect.—We ought always to begin gently, and to finish gradually, never abruptly.—Exercise in the open air has great advantages over that in houses and close apartments. Besides, strong bodily exertions, such as dancing, fencing, turning, and the like, if practised in small and confined places, quickly corrupt the air, on account of the increased perspiration, and render it unfit for breathing.—If we take exercise for the sake of health, we ought to employ ourselves during that time with some agreeable object, and not perform any labour, nor seriously occupy the mind. Hence, certain kinds of exercise cannot be unconditionally recommended to every individual, as means conducive to health ; though they should of themselves be proper, and in other respects agree with the body. He who forces himself to any exercise, or
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performs it with reluctance, will thence experience more disadvantage than benefit: motions or tasks, therefore, which we impose upon ourselves, as recreations after work, after sitting and long thinking, ought to be strictly relaxations, not toils. Persons of an active mind, however, find a species of relaxation, and even satisfaction, in a change of their pursuits, and particularly in the transition from hard and difficult, to more pleasant and easy work. To such individuals any exercise is frequently of great advantage, especially if it answer, or appear to them to answer, any useful purpose. To one who has habituated himself to grave and serious pursuits, it should not be recommended to join in amusements requiring bodily exertion, and attended with dissatisfaction and irksomeness; for his health will not be benefited by exercise, at once unusual and unpleasant.

To continue exercise until a profuse perspiration, or a great lassitude, take place, cannot be wholesome. In the forenoon, when the stomach is empty, or, at least, not too much distended, muscular motion is both most agreeable and healthful; it strengthens digestion, and heats the body less than with a full stomach. A good appetite after it, is a proof, that it has not been carried to excess. But it is not advisable to take violent exercise immediately before a meal; as this might occasion a deficiency of humours, which are necessary to promote digestion. If we sit down to a substantial

dinner or supper, immediately after fatiguing walks, when the blood is heated, and the body is in a state of perspiration, the worst consequences may arise, especially if we begin with the most cooling dishes, or with salad, or a glass of cold drink.—Exercise is likewise hurtful directly after meals; since it obstructs the office of digestion, and propels those fluids too much to the surface of the body, which are designed for the stomach, to promote the solution of food, and without which many crude and undigested particles are forced to enter, and to mix with the blood. The old rule of the *Salernitan School*, “*post cœnam stabis, seu passus mille meabis,*” (i. e. after supper stand or walk a mile,) is as frivolous as it is absurd; for experience sufficiently informs us, that most persons, particularly the nervous and irritable, are liable to the heartburn, eructations, and even vomiting, when they are obliged to move about, or to take any exercise, immediately after meals. The instinct of the lower animals also contradicts this rule; because the wildest creatures are inclined to rest after a good feed.—Persons, however, who are under the necessity of moving immediately after their meals, or who have no other spare time for walking, must endeavour to overcome these inconveniencies by custom, and a more rigid temperance: they should first take the most gentle kind of exercise, and gradually increase it; and, as the late hours of dining now so generally in fashion, have in a manner abolished heavy suppers, a moderate walk
after

after a slight evening's repast, cannot be injurious. But at all events, the most fatiguing exercise, after a full meal, should be delayed till the stomach has digested and assimilated the food, which generally takes place in the third or fourth hour after eating.—The most proper occupations, after dinner, are such as can be performed without trouble, or great efforts of reflection, and bodily exertion; and such as procure a kind of amusement.

Walking, the most salutary and natural exercise, is in the power of every body; its degree and duration we can adapt to the various circumstances of health. By this exercise the appetite and perspiration are promoted; the body is kept from costiveness; the mind is enlivened; the motion of the lungs is facilitated; the rigidity and contraction of the legs, arising from too much sitting, is relieved. The most obstinate diseases, and the most troublesome hysteric and hypochondriacal complaints, have been cured by perseverance in walking only. The most proper walk for health is in an agreeable country, in a healthy, pure, dry air, amidst sociable and cheerful conversations, in a mild sunshine day, whether in spring, autumn, or winter; in the summer mornings and afternoons; but by no means in the oppressive heat of the sun. To walk in towns, although it gives exercise, is less conducive to health; because the atmosphere is generally filled with vapours arising from pernicious exhalations.—Those who are not hardened against the vicissitudes of the weather, must avoid not only hail and rain, but
also

also the cold mornings and evenings, and ought, therefore, in rough and moist cold weather, rather to take exercise within the house, but without stopping the access of air. Violent wind should also be shunned; and, if we are obliged to face it, we ought not to walk too quick, particularly in winter, when the small pores of the skin are compressed by the air.

In walking, the proper choice of places is a matter of much importance. Marshy and damp fields should be avoided; and in autumn, when the foliage is putrifying, it is not advisable to choose woods, groves, and damp meadows, for our pleasure-walks. In summer, on the contrary, a walk in the forests or meadows is both agreeable and healthful. Hills and elevated situations deserve particularly to be visited, not only on account of the purer air we breathe, but also of the body enjoying a variety of exercise, in ascending and descending.

The inhabitants of towns require longer walks for the preservation of their health than country-people. The latter, even with less exercise, derive vigour of body and serenity of mind, from a purer air, and more simple manners. Regular and daily walking, therefore, cannot be too much recommended to the citizen, who in the present age is so much harassed with nervous and hypochondriacal complaints; but, though this be an useful and excellent species of exercise, yet some

rules ought to be observed, if we expect to derive from it the wished-for advantages.

1. We should contrive to procure as much pleasure and recreation after serious occupations, as is possible and consistent with our situation in life.

2. To read during walking, whether the subject be of a grave or amusing nature, is a custom improper in itself, and detrimental to the eyes, besides the danger it occasions of falling: this practice not only deprives a person of the principal advantages of walking, but people easily accustom themselves to an unsafe and unsteady manner of carrying the body. To the eyes it is attended with the worst consequences, because the focus is continually shifted, and the retina is thus excessively fatigued.

3. We should not always resort to the same, perhaps often a dull or uncomfortable walk, though it deserve the preference on account of its vicinity: it is better to change the walk occasionally, and gradually to extend the distance. The most agreeable prospects should be selected, in order to procure variety; otherwise the perpetual uniform walk will excite melancholy and unpleasant sensations, as much as the closet or the study.

4. We ought to accustom ourselves to a steady and uniform, but not a quick pace.

5. An agreeable companion contributes much to serenity of mind: but let us rather go alone, than

in dull or disgusting company; if we at all possess the art of profiting by solitude.

6. In the choice of our companions, we should attend not only to the similarity of character and taste, but should also, in this exercise, join those whose pace accords with ours; for if the heavy and fat man make a lean and light-footed person the companion of his walks, he will remain behind; or be overheated and fatigued, if he endeavour to keep pace with his partner, who must likewise suffer from the constraint of walking slower.

7. Some people cannot speak or converse in walking, without frequent stops, and thus make no progress. From this singularity, they are generally much fatigued at their return, without having reaped any advantage from their exercise.

Running not only shakes the body with greater violence than walking, but it heats the head and face, and too much quickens the circulation of the fluids. Soon after a meal, it prevents digestion, mixes the pure fluids with the impure, and obstructs the secretion of humours. If long continued, it is hurtful to every body, particularly to those unaccustomed to it, to the plethoric, to those subject to hemorrhages, gravelly complaints, and frequent nervous headach, and to sedentary people employed in mental labour.—To run up a hill, too much fatigues and strains the muscles: to run against the wind, produces giddiness in the most

robust, and makes them liable to various accidents, that may become dangerous.

Dancing, considered in itself, and under proper limitations, is an admirable exercise, particularly in winter, when the heavy atmosphere, much rest, and sitting, render the blood thick, and dispose people to hypochondria. Moderate dances have every advantage of a gentle exercise, besides the beneficial effects produced on the mind by cheerful company and music. On the other hand, the more violent dances may be, and frequently are, attended with the most pernicious effects. The exertion of so many muscles, the quick inspiration of a warm atmosphere in a crowded assembly, impel the blood to circulate with a rapidity, equal to that in the hot stage of a fever; and forcibly drive it to the head and breast, so that the vessels seldom possess a sufficient power of resistance. If we add to this, the effect of heating liquors, of too sudden an access of the cold air so eagerly courted, of exposing the face, head, and breast suddenly to its influence, together with the imprudent use of cooling drinks, and ice itself, we can no longer be surprised, that blood-spitting, consumption of the lungs, and inflammatory disorders, are the frequent consequences of such excesses. This violent species of exercise is particularly dangerous to females; and the use of fans, in order to cool themselves, and thus check perspiration, (which is wisely designed by nature to produce

produce the same effect, in a more salutary degree, if not wantonly repelled,) is extremely imprudent. Weakly persons ought, for their own sake, to join in no other but the shorter and less fatiguing dances, especially in summer.

A dancing-room ought to be cool, but without admitting currents of air, and without too much smoke from candles. It would be advisable to the whole company, after dancing is over, and before they venture into the open air, to change their linen, and afterwards to wait a quarter, or half an hour, before they return home. During that time, they may be refreshed by tea, or whatever diluent drink they please, and thus encounter the open air without danger. With the same intention, every dancing-assembly ought to conclude with minuets. People of an indisposed and debilitated body, such as the consumptive, those troubled with ruptures, gravelly and similar complaints, should not attempt dancing. This exercise, lastly, is hurtful to every person in the hot and sultry days of summer, when nature renders cooling drinks indispensable, and when we are much inclined to perspire, without any additional inducement.

Riding in carriages is an exercise the more conducive to health, that the gentle jolts tend to resolve stagnations in the intestines of hypochondriacs, corpulent people, convalescents, and the consumptive. But, if the motion of the carriage be too rapid, it is hurtful, as it not only hurries on perspiration,

spiration, before the matter of it be properly prepared, but also injures the solid parts, particularly the kidneys; generates congestions of the blood towards the head, and, of consequence, headach, giddiness, vomiting, and obstructions. . If, however, we wish to derive all the good effects from riding in a carriage, the body of it ought not to be too nicely suspended in straps and springs, nor should the motion be too slow. One of the windows, at least, ought to be kept open, that the perspiration and breath of several persons, packed up in so narrow a place, may not too much corrupt the air.

The infirm, who cannot enjoy the free air, on account of bad weather, should take exercise upon rocking-horses, or similar contrivances, in halls and spacious apartments, while the upper part of the windows is kept open, guarding however against a current of air.—Lastly, the furious driving in open carriages, in sultry hot weather, may be indeed pleasant, on account of the agreeable air occasioned by the current; but it may also be very dangerous to persons subject to violent perspiration.

Leaping, fencing, the fashionable military exercise, and manœuvring with horses, are each of them violent kinds of exercise, which cannot be advised to those, who are not in a perfect state of health, or to the corpulent and plethoric, whose blood-vessels may be endangered, so as to burst by motions,

tions, which require the muscular exertion of the whole body.

To persons who have not the use of their limbs, and are weak and delicate, the motion of a sedan-chair is of great benefit, if it be continued for a sufficient time; for it disposes the body to a free perspiration. Of the same nature is the sailing in barges, on calm waters.

A much more active kind of bodily motion is produced by sailing at sea. Those who are unaccustomed to it, generally experience giddiness of the head, nausea, and vomiting: hence it is beneficial to an impure stomach. To consumptive patients, it frequently is the last resource; but it is wrong to delay it, till all other remedies have failed. For it is not in the last stage of consumption, when the lungs are already ulcerated, or when an abscess has already burst in the thorax, and the ichorous matter has been communicated to the blood, that we can expect any benefit from sea-voyages. The changes of scene and climate, indeed, likewise powerfully co-operate in effecting changes in the human system; but, if the disease has preyed too much on the vitals of a patient, or if he is spitting blood, the motion of the vessel must necessarily prove injurious. On the other hand, the weakly, the nervous, and particularly the hypochondriac, cannot resort to any better remedy than that of a sea-voyage.

Riding on horseback is, in a certain respect, an excellent medical remedy, by which all the muscles, from the toes to the head, are in reciprocal motion, and which manifests its principal effect on the intestines of the abdomen. It clears the intestinal canal, promotes the evacuation of crude substances, strengthens the stomach and bowels, improves digestion, prevents or resolves incipient obstructions, and supports the perspiration of the whole body. To the hypochondriac it is an inestimable remedy; but, if the obstructions should be too far advanced, riding ought either not to be attempted at all, or be practised in as slow a pace as the horse can walk. In short, it is to be undertaken with the same cautions as sailing, in those stages of consumption, which admit of these remedies.—Riding, further, is not practicable in cases of hemorrhoids, ruptures, and gravel. The feeble and relaxed ought to begin with a gentle pace, and to increase it gradually; for a moderate trot is the proper medicinal mode of riding. And, if they expect to derive real advantage from riding on horseback, they must neither trot too fast, nor make use of a heavy and shaking horse. Such patients as are not accustomed to this exercise, particularly hypochondriacs, generally ride with great timidity; they are, as it were, in continual danger of life; by the bad posture of their bodies on horseback, they are frequently hurt in parts accessible to injuries;—stitches
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in the side, congestions of blood to the head, and violent perspiration, counterbalance every advantage received from their excursions. To most of these patients, if they can afford it, the *manage* cannot fail to be extremely useful; for the regular manner of training the horses there, their uniform and steady motion, the attention paid to the proper posture of the rider, by keeping his breast and abdomen erect, and the legs properly extended, all are circumstances uncommonly favourable to the patient and convalescent. But, even here, it is the moderate kind of exercise only, that promises real benefit in a medicinal sense;—continued furious driving and hard trotting is always extremely dangerous. For similar reasons, riding on horseback, as well as in carriages, immediately after a meal, is still more dangerous than walking on foot. The most proper time for riding is the morning, when the stomach is empty. It should, however, not be long continued; one hour, in general, is quite sufficient; and in this respect riding is preferable to any other exercise, as it can be practised by persons, whose business does not permit them to devote much of their time to that purpose.

Swimming is likewise an useful exercise, which at the same time has the additional advantage of a cold bath. The motions and muscular exertions, which it requires, increase its utility: some rules and precautions, however, must be attended to.

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They have been stated at considerable length in CHAP. III, "On the use of Baths." I shall, therefore, only remark at present, that we should not enter with the feet, but with the head, into a cold bath; that the body should be neither too warm nor too cold in applying to this bath; and that we should not choose dangerous rivers, or places, nor enter the water sooner than the rays of the sun have in some degree warmed it, and rendered it more temperate. The sensation produced by cold water is indeed less to be apprehended, than the consequences arising from imprudently plunging into it, when the body is either too much cooled or heated.

* *Playing at Hand-ball, Cricket, and the like, have a more powerful effect on the muscles than the abdomen; and are, therefore, in one respect unavailing to sedentary people, and on the other hand unnecessarily fatiguing.*—*Carouffells*, or riding on machines in a circle, are motions which require too much muscular exertion of the weakly, whose strength admits only of a moderate exercise. These, as well as *swinging machines*, and the lately contrived *swinging cars*, moving on a wheel with perpendicular pivots, are the least proper for those who are inclined to giddiness, and nervous symptoms in general, on account of the fear, and sometimes the dangerous accidents, attending them. But, at the same time, both species of exercise are uncommonly favourable in such states of health, as require an uniform and gentle motion of the whole body, in the

the pure and open air, particularly in the high swinging cars, which are exceedingly well calculated for that purpose.

Speaking is one of the most healthful and necessary species of exercise; and, without any ludicrous idea, I may assert, that this exercise is particularly salutary to the female sex, who are more confined at home than men. Here, however, as in other cases, excess is prejudicial. Loud reading and speaking is of singular advantage to literary men, and affords them a good substitute for other kinds of exercise, for which they seldom have sufficient leisure or opportunities. It is to this cause, we may justly ascribe the longevity of many schoolmasters, and teachers in universities, who, notwithstanding their sedentary employments, and the corrupted air which they daily breathe in school-rooms, attain to a long and healthy life.—To speak very loud, and to exercise the voice immediately after a meal, is pernicious to the lungs, as well as to the organs of digestion.

Singing promotes the lively circulation of the blood through the lungs, and all the parts of the body; the lungs, as well as the abdominal intestines, are shaken by the vibrating motion of the air, in a manner much conducive to their salubrity. The phlegm, and other noxious matters, collected about the pulmonary vessels, are thereby resolved and carried away, so that they cannot mix with the blood, and the most dangerous stagnations in the
smaller

smaller vessels are thus prevented: the blood is uniformly distributed and driven to the larger veins and arteries. For, the same law of nature, by which river-water is preserved sweet and fresh, while that of pools and ditches stagnates and putrefies, is also fully applicable here.—The air inhaled in singing is of similar service to us, as the current to the water: perspiration is thereby forwarded, and the mind is enlivened with the body. Those sedentary artificers or mechanics, who from habit almost constantly sing at their work, unintentionally contribute a great deal to the preservation of their health,

All the *Wind-Instruments* are more hurtful than advantageous. For, as much air is thereby introduced into the lungs, and which is but gradually and partially emitted, that organ thus becomes soon debilitated. Hence in persons of weak lungs, who are very fond of playing the flute, hautboy, or French-horn, we frequently observe blood-spitting, cough, shortness of breath, and pulmonary consumption. Besides, blowing checks the circulation of the blood through the lungs, accumulates it towards the head, and disposes such musical professors to apoplexy. By the violent expulsion of the air, the abdominal muscles are continually contracted, all the parts of the abdomen are compressed, the circulation of the fluids is retarded, and many unpleasant and frequently fatal consequences are induced.

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There are other kinds of *musical instruments* which deserve to be condemned, in a dietetical view. Such as the *Harmonica*, which, by the rotation of the glasses on the fingers, (a kind of negative electricity,) induces a great degree of nervous weakness. And this effect is much accelerated by the acute and vibrating sounds of this instrument, by which the organs of hearing are continually and intensely affected. Perhaps all stringed instruments, which are played by the touch of the fingers, such as the harp, the guitar, and the violin, produce a similar effect on the nervous system; particularly if it be true, that the *papillæ*, or the points of the fingers, are the strongest conductors of the supposed nervous fluid. It is at least probable, that to be able to play on such an instrument, with expression, requires a more than common sensibility of the nerves, which indeed may be sometimes artificially acquired, but to the detriment of health. It would be surely improper, to draw any comparison between the effects frequently visible on other parts of the human body, from too high a degree of irritability; and the consequences of stimulating the nerves by means of vibrations applied to the most sensible parts of the upper extremities; yet so much is certain, that a local excitement of irritability may be gradually propagated over the whole nervous system: and why should not a similar injury be apprehended, though in a less degree, from raising some parts
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of the body to a preternatural state of sensibility by constant practice?—The common character of many, who are called *Virtuosi*, seems, at least, to lead us to such a conjecture.—Every body further knows, in how extraordinary a manner music may influence the mind, that the passions of persons of sensibility may be most effectually roused and allayed by it; nay that, in some individuals, every tone of the mind can be effected, at pleasure, by the various modifications of harmony. As then, sadness, grief, and other depressing passions may be overcome by appropriate music, it is an exercise deserving every commendation. Yet we must neither expect to cure by it diseases of the mind, nor their concomitant bodily disorders: this is beyond the power of music, which acts as a palliative only, or as a nervous stimulus, the effect of which is instantaneous, but of short duration. For, as soon as the exciting cause ceases, it is succeeded by an uncomfortable sensation of debility and relaxation. It is even probable, that music, like all other anodyne and soothing remedies, may in the end increase the disposition to that nervous weakness, by the too frequent repetition of it. Finally, the posture of the body, in practising music, also deserves attention; as the breast and abdomen may be compressed by stooping, so as to cause very serious complaints; and as the eyes may be injured by reading the notes, at too great or short a distance, especially for the double keys of the harp
and

and harpsicord : indeed, reading music is in general more fatiguing to the eyes, than any other kind of exertion.

Friction of the body, which can be performed either by the naked hand, a piece of flannel, or still better by a flesh-brush, is one of the most gentle and useful species of exercise. The whole body may be subjected to this mild operation, but principally the abdomen, the spine, the arms, and legs. It clears the skin, resolves stagnating humours, promotes perspiration, strengthens the fibres, and increases the warmth and energy of the whole system. In rheumatism, gout, palsy, and green-sickness, it is an excellent remedy.—Daily friction of the whole body was with the ancients, and still is in the East-Indies, considered one of the most indispensable requisites of a people, who by their indolent manner of life seem to have adopted it, more with a view of indulging in sensual pleasures, than as the means of preserving health. It is, however, one of the most salutary contrivances, by which the whole body receives nearly as much benefit, as from a lukewarm bath, and which, as being in the power of every person, ought to be more frequently and more generally used. To the sedentary, the hypochondriac, and people troubled with indigestion, who cannot afford leisure to take sufficient exercise, the daily friction of the belly, in particular, cannot be too much recommended as a substitute for other means, in
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order to dissolve pituitous stagnations forming in the abdomen, and to overcome the weakness of the vessels. And though it be not attended with all the advantages enjoyed from exercise in the open air, it still produces a powerful local effect on the organs of digestion; for the moderate exercise of a whole day, will scarcely invigorate the abdominal vessels, and the stomach in particular, more than the friction of these parts, continued for half an hour. But, if it be intended for these beneficial purposes, it should be performed in the morning, on an empty stomach, or in bed before we rise, gently and steadily in a circular direction, and at least for five or ten minutes at a time.

In a weak state of the abdomen, and the nerves in general, we may derive still more powerful effects from friction, if the stomach and the whole abdomen be rubbed every morning, and at night, before going to bed, with a sponge, or a piece of flannel dipped in cold water. This possesses still greater advantages over remedies taken internally, as it can be safely employed, even in cases where the alimentary canal, from its obstructed state, scarcely admits of any other remedies, while friction, and affusion of cold water, generally relieve these obstructions, and even habitual costiveness.

Motion or exercise, upon the whole, ought to be continued only, till we feel an agreeable lassitude, and a sensible degree of perspiration. If it be carried farther, it weakens the body, which should

should be strengthened by it, and leaves behind disagreeable consequences to the lungs, filled with heated blood. Even the robust man will experience some, though less unpleasant effects than the debilitated, if he has committed excess of this nature.

After having taken exercise, we should not venture to rest in a cool place, nor upon a green plot; still less should we expose ourselves to a current of air; but rather resort to a place warmed by the mild rays of the sun in summer, or a moderately warm apartment in winter, so that the sudden change of temperature may not injure us, by repelling perspiration.

For the same reasons, the thirst we generally feel after exercise, ought not to be instantly satisfied by cooling drink. It is however allowable, to drink some warm or diluted liquors, if we cannot wait till the natural warmth be restored. The late Dr. Fothergill very properly advised, that people in a state of perspiration should, to avoid all danger, eat a mouthful of bread, with a little salt, and thus gain time, till the blood and the liquor to be drunk had acquired a more corresponding temperature. A small quantity of vinegar, or the juice of lemons in water, is well calculated to quench thirst, and at the same time to encourage perspiration. Upon the whole, travellers on foot ought to be upon their guard against too much drink. For, the more liquids they take, the more they will perspire,

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spire, and the greater will be the subsequent relaxation and the danger of catching cold, when their clothes are once pervaded by perspirable matter. They should also abstain from drinks producing a laxative effect, which would cause debility, and even faintings. The most suitable of all substances to mix with water, is the pure or essential acid of tartar, with a small quantity of sugar. This affords a cooling and refreshing beverage, without relaxing the bowels, like lemonade. Those with whom the vitriolic acid agrees, may take a tea-spoonful of a mixture, consisting of six or eight parts of spirits of wine and one part of vitriolic acid, to a pint of water. A beverage made of a weak acidulated wine and water is cooling and strengthening. In the very cold weather of winter, people ought to avoid all heating liquors, such as ardent spirits and strong wines. Warm drinks, as tea and coffee, are equally improper, and a poor protection against cold; for their warming property is of no duration; they are rather productive of debility, a more torpid circulation of the blood, and consequently of an increase of cold. It is much better to eat previously some solid meat, by which the digestive organs may be exercised, such as cold animal food and bread, and to drink after it some bitter ale or beer. On the other hand, when we suffer from intense cold, or have been exposed to the wind and weather, a few cups of strong tea, with plenty of cream and sugar, are then the best and safest refreshment: they are
equally

equally invigorating in summer after extreme heat and fatigue.—Feeble individuals, whose stomach generates much acid, and who are frequently troubled on their journeys with a sudden voracious appetite, are liable to the most painful attacks of weakness on the road, and on that account they ought always to be provided with some solid food in their excursions. Such persons should carefully abstain from the use of wine, brandy, or other heating and stimulating drinks, on their journeys, especially in the morning: they might with more advantage eat some bread and butter, warm or buttered ale, strong broth, gruel, or the like nourishing substances.

We are now to consider the consequences arising from the *want of exercise*. This, indeed, is still more debilitating than too violent motion. The solid parts of the human frame are relaxed by it; the circulation of the fluids is retarded; by degrees they stagnate in the smaller capillary vessels; the secretions are diminished; and abundance of moisture or fat is generated, which renders the body, as well as the mind, progressively more indolent and lifeless; relaxation of the muscles, obstructions of the intestines, hemorrhoids, apoplectic fits, various species of dropsy, and at length a premature death, are the sad consequences. The sedentary men of letters are the most unhealthy of all human beings, because their bodies have scarcely any other exercise but the imperceptible motion of the

arms.—Want of appetite, flatulency, anxiety, at one time obstructions, at another diarrhœa, and the most diversified nervous symptoms, are their constant attendants. Sleep, and the susceptibility of pleasure, are beyond their reach; a thousand tormenting hardships, hypochondria, and at length a complete state of melancholy is their frequent lot. Temperance alone does not remedy all these evils; for, since we cannot remain vigorous and healthy for two days together, with the same mass of blood, a new access of the most subtle and elaborate parts of our fluids must daily support the nervous system, in order to preserve its regular functions. If this be not continually restored, weakness and relaxation of body and mind are the inevitable consequences; with this difference only, that in a state of debility, from too much bodily exercise, the thick and coarse particles of the fluids are carried into circulation with the others, so that the next meal, or the first sleep after it, very soon supplies the deficiency. In mental labour, on the contrary, digestion is interrupted, the crude and viscid parts of food remain unassimilated, and the body is prevented from receiving its proper nourishment. In like manner, the sedentary mechanics and artificers are affected; particularly shoemakers, taylor, and weavers. They experience much the same hardships as the men of letters; and it has been frequently observed, that they are very liable to diseases of the mind, and, above all, to religious fanaticism.

Standing,

Standing, though useful as a change after long sitting, is apt to occasion accumulations of blood, or rather of the ferous part of it, in the lower extremities. Swelled legs are, therefore, common among printers. It is a posture little calculated to relieve the studious, as the body is at the same time more fatigued by standing than sitting. If we sit much, we must attend to the two following rules; 1. that no part of the body be compressed; and 2. that it be not too long continued at one time, without walking about the room.—The common manner of sitting, with the head reclined, is extremely pernicious; for the circulation of the fluids in the abdomen is thus checked; the intestines are compressed, and the vessels of the breast are contracted. The head also suffers by bending it too much forward; as the blood is thereby impelled to circulate towards it more copiously, than is consistent with health. The studious, in particular, would do well, not to perform all their work in a sedentary posture, but to relieve at once their body and mind occasionally, by standing, or walking about the room. The mode of sitting ought also to be made as convenient as possible, so that both the body and head may be kept in an almost perpendicular direction; that the breast and abdomen may not be obstructed in their alternate expansion; and lastly, that the arms and legs may not be held in a crooked and unnatural position; and all this should

be particularly attended to, by those who teach children to read and write. The pressure of the abdominal muscles may in great measure be prevented by high tables and desks, and by raised stools or chairs, upon which a person rather stands than sits.

To lie or rest horizontally, is attended with a cessation of all exercise. If the head be placed low, and this too long continued, there may arise head-ach, by the increased pressure of the blood on the brain. Here, likewise, a frequent change of posture is necessary, in order to obstruct none of the bodily functions, and to prevent the stagnation of humours.

Finally, the *functions of the mind* deserve no less attention than those of the body.

Alternate changes of tranquility and activity are equally beneficial to the mind, as rest and exercise to the body. Too long continued, too frequent, and too profound reflections, are alike injurious to both. The same powers are expended here as in bodily labour, and with still greater losses; for muscular exertions, though weakening at first, are reproductive of new vigour. This may indeed be also applied to mental labour, by which the mind improves in capacity, but the body is the sufferer from every unusual exertion of the mind; and, with the body, the mind by degrees becomes also diseased:—The vital spirits are, as it were, withdrawn from the organs of sense; and the body is
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for some time almost deprived of feeling. Hence it happens, that in profound meditations we frequently become, in a manner, absent. Reflection always directed to one object, not only debilitates, but also confines the other faculties of the mind, and does not suffer it to return from its favourite pursuit. Thus, we often see melancholy, nay madness itself, arise in the persons devoted to the contemplation of one particular object. Intense and abstruse thought, in general, if not checked in time, may be attended with stupor or insanity.

To enable us to reflect seriously upon an important subject, time and place ought to be so chosen, that the mind may be employed with no other object engaging the attention of the senses; for two ideas cannot be conceived at one time. Hence we should study in an apartment which is not too light, and where we are not disturbed by noise;—the muscles should not be actively employed during study: it is therefore improper and pernicious, immediately after meals, or before digestion be completed. The morning, indeed, is the most profitable time for studying; though necessity and custom here likewise make many exceptions; so that some persons are able to perform their mental tasks, from gradual practice, during the greatest noise, and in a room full of children.

Much and constant inactivity of mind agrees, indeed, well with the body, which in that state fully performs its functions, becomes unwieldy, inso-much as at length to drown the mental powers; the ideas become obscure and confused; and a total loss of memory, or obliteration of the past, is but too often the consequent effect of such inactivity.



C H A P. VII.

Of SLEEPING and WAKING; their just proportion, with regard to age, the constitution of the body, mode of life, and other circumstances.

SLEEP and wakefulness are nearly in the same relation to one another, as exercise and rest. Waking always presupposes a certain degree of activity; all the *natural* functions, digestion, the preparation of the chyle and blood, assimilation, secretion, and excretion, are then more vigorously performed, and would soon exhaust their powers, if sleep did not restore to them the beneficial and indispensable supplies.

Sleep is, therefore, necessary to health and existence; and it is an improper and fruitless attempt, to deprive ourselves, from an ill-directed activity, of the requisite portion of this refreshment; for Nature will maintain her rights, in spite of our efforts to subvert them: both body and mind suffer by this outrage, without attaining any real advantages from an extravagant watchfulness.

Before I proceed to inquire into the consequences arising from either too much or too little sleep, it will be useful to premise a concise theory, or the physiology of this suspension of the mental powers.

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When the body is fatigued, when the senses, together with the voluntary motions of the muscles, have been for some time active, we stand in need of the alternation of rest, which is obtained by sleep. During a sound sleep, the senses, and the voluntary muscular motions, are not exercised; but the *vital* functions, such as respiration, and the circulation of the blood, as well as most of the natural functions before stated, are regularly though more slowly performed. During sleep, therefore, the motion of the heart and the blood-vessels, even the action of the brain and the nervous system, as likewise the peristaltic or vermicular motion of the stomach and the intestines, and the secretion of the fluids, are performed in an uniform and steady manner. Previous to sleep, we perceive a lassitude of the senses, but principally of the muscles which are subject to our will, and of those also which keep the body in an erect posture: the head inclines downwards, the upper eye-lid and the lower jaw-bone likewise sink; the venous blood accumulates towards the heart, and compels us to yawn, in order to facilitate the transition of the blood into the lungs, by the deep breathing which takes place: finally, the brain itself as the organ of the mind, appears to be fatigued; hence our ideas become irregular, and there arises a kind of faint depravation of the understanding. That during sleep the motions of the heart are stronger, and that perspiration is more active, must be ascribed to

the warmth of the bed coverings, by which the insensible perspiration softens and relaxes the skin. But a person, who sleeps in his usual dress, will feel chilly;—those animals which sleep long, as the hedgehog, the murmur-deer (*Marmota Alpina*, L.), suffer an extraordinary degree of cold.—As the senses are inactive during sleep; as the nervous energy is less exhausted, and its secretion is still taking place, a new supply of it is collected, and the organs of sense, as well as the muscles, receive additional vigour. This impels us to awake, particularly if any stimulus be the occasion of it. While we are asleep, the nutritive particles can more easily attach themselves to the fibres, and fat also is more readily generated, from the retarded circulation of the blood. After we have slept some time, we are apt, on awaking, to stretch the limbs and joints of the body, and sometimes to yawn: the latter, with an instinctive view of promoting the circulation of blood through the lungs, which was retarded during sleep; the former, namely stretching, in order to assist the extensor muscles, which, by the flexion of the limbs in sleep, had been more extended, and in order to expand again the flexor muscles, that had been moderately contracted.

The proximate cause of sleep appears to be an impeded motion of the nervous fluid in the brain. This motion is produced by a kind of collapse of the subtle insertions of the nerves, as well as by a mechanical compression of them. Hence we can explain,

explain, how things so totally opposite are able to produce sleep, when they either exhaust or compress the tubes of the nerves. Of the former kind is every violent and fatiguing species of labour, a considerable loss of blood, perspiration increased by external heat, and every thing that withdraws the blood from the head; for instance, warm baths of the lower extremities, a stomach filled with much food, &c. Of the latter kind of incitements to sleep, namely, those that act by compression, is every mechanical pressure on the brain, whether it proceed from water accumulated in the ventricles of it, from a local depression or fracture of the cranium, or from extravasated blood:—in like manner, the impeded regress of the blood from the brain, or the increased access of it to that organ, may effect such a pressure, by distending the blood-vessels, as is the case in using narcotics, or wine and other spiritous liquors; and, lastly, an intense degree of cold, as well as the state of an approaching apoplexy.—Sleep is promoted by tranquility of mind; by the absence of every stimulus to the body; by silence and darkness around us; by a complete rest of the senses; by gently and uniformly affecting one of the senses, for instance, by music or reading; and, lastly, by a gentle external motion of the whole body, as by rocking or sailing. On the other hand, every painful sensation, a great noise, a bright light, strong exertions of mental powers, and particularly violent passions,

passions, are calculated to prevent sleep. Thus likewise sleep can be frustrated by hot, spicy, and other drinks, which are said to occasion a more speedy secretion of the nervous fluid.

Dreams are plays of the imagination, and in most instances proceed from external sensations. They take place only, when our sleep is unsound, in which case the brain and nervous system are capable of performing the motions above described. We seldom dream during the first hours of sleep; perhaps, because the nervous fluid is then too much exhausted; but dreams rather occur towards the morning, when this fluid has been, in some measure, restored. Every thing capable of interrupting the tranquility of mind and body, may produce dreams. Such are the various kinds of grief and sorrow, exertions of the mind, affections and passions, crude and undigested food, a hard and inconvenient posture of the body. Those ideas have lately occupied our mind, or which have made a lively impression upon us, generally constitute the principal subject of a dream, and more or less employ our imagination, when we are asleep. Animals are likewise apt to dream, but seldom; and even men living temperate, and enjoying a perfect state of health, are little disturbed with this play of the fancy. Nay, there are examples of lively and spirited persons who never dream. The great physiologist HALLER considers dreaming as a species of disease, or as a stimulating cause, by
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which the perfect tranquility of the *sensorium* is interrupted. Hence, that sleep is the most refreshing, which is not disturbed by dreams, or, at least, when we have no clear recollection of them.

I have before observed, that most of our dreams are sports of fancy, and derive their origin chiefly from external impressions: almost every thing we see and hear, when awake, leads our imagination to collateral notions or representations, which, in a manner spontaneously, and without the least effort, associate with external sensations. The place where a person whom we love formerly resided, a dress similar to that which we have seen her wear, the objects that employed her attention, no sooner catch our eye, than the beloved object itself re-appears to our mind. And, though these images, associating with external sensations, do not arrive at complete consciousness, within the power of imagination, yet even in their latent state they may become very strong and permanent. I have been informed, for instance, of a young man, who was attacked with convulsions, every time he heard the name of *Jesus* repeated; owing, it seems, to the circumstance of his mother having once invoked the name of *Jesus* in a terrific manner, when she, as well as the boy, were much frightened by a tremendous peal of thunder. But this is only an indirect demonstration of the existence of a faculty, which is very active in dreams, and which may be aptly called the *subreasoning faculty*, or the power
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of abstracting similarities. The conclusions, thus formed, are more frequent and active, than in the waking state ; because they are seldom controlled by reflecting reason. I shall make use of one illustration only.

Very frequently we find, that in a dream a series of representations is suddenly interrupted, and another series of a very different kind occupies its place. This happens, as soon as an idea associates itself ; which, from whatever cause, is more interesting than that immediately preceding. It then becomes the prevailing one, and determines the association. Yet by this, too, the imagination is frequently reconducted to the former series. The interruption in the course of the preceding occurrences is remarked, and the power of abstracting similarities is in search of the cause of this irregularity. Hence, in such cases, there usually happens some unfortunate event or other, which occasions the interruption of the story. The representing power may suddenly again conduct us to still another series of ideas, and thus the imagination may be led by the subreasoning power before described, from one scene to another. Of this kind, for instance, is the following remarkable dream, as related and explained in the words of Prof. MAASS at *Halle* : “ I dreamed once,” says he, “ that the Pope visited me. He commanded me to open my desk, and he carefully examined all the papers it contained. While he was thus employed,

employed, a very sparkling diamond fell out of his triple crown into my desk, of which, however, neither of us took any notice. As soon as the Pope had withdrawn, I retired to bed, but was soon obliged to rise, on account of a thick smoke, the cause of which I had yet to learn. Upon examination, I discovered, that the diamond had set fire to the papers in my desk, and burnt them to ashes."

This dream deserves a short analysis, on account of the peculiar circumstances which occasioned it. "On the preceding evening," says Prof. Maafs, "I was visited by a friend, with whom I had a lively conversation, upon Joseph II.'s suppression of monasteries and convents. With this idea, though I did not become conscious of it in the dream, was associated the visit which the Pope publicly paid the Emperor Joseph at Vienna, in consequence of the measures taken against the clergy; and with this again was combined, however faintly, the representation of the visit, which had been paid me by my friend. These two events were, by the subreasoning faculty, compounded into one, according to the established rule—that things which agree in their parts, do also correspond as to the whole;—hence the Pope's visit was changed into a visit made to me. The subreasoning faculty, then, in order to account for this extraordinary visit, fixed upon that which was the most important object in my room, namely, the desk, or rather the papers locked
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up in it. That a diamond fell out of the triple crown, was a collateral association, which was owing merely to the representation of the desk. Some days before, when opening the desk, I had broken the glass of my watch, which I held in my hand, so that the glass fell among the papers. Hence no further attention was paid to the diamond, being a representation of a collateral series of things. But afterwards, the representation of the sparkling stone was again excited, and became the prevailing fancy ; hence it determined the succeeding association. On account of its similarity, it excited the representation of fire, and was indeed confounded with it. Hence arose fire and smoke. But, in the event, the writings only were burnt, not the desk itself ; which, being of comparatively less value, the attention was not at all directed to it."

It is further undeniable, that there are in the human mind certain obscure representations, and that it is of great advantage to be convinced of the reality of these images, if desirous of perceiving the connection subsisting among the works of the imagination. Of the numerous phenomena, founded upon obscure ideas, and which consequently prove their existence, I shall only remark the following. It is a well-known fact, that many dreams originate in the impressions made on the body during sleep ; that they consist of analogous images, or such as are associated with sensations that would arise from these impressions during a waking state. Hence,

for instance, if our legs lie in a vertical posture, we are often terrified by a dream, that implies the imminent danger of falling from a steep rock or precipice. The soul must represent to itself these external impressions in a lively manner, otherwise no ideal picture could be thus excited. But, as we do not become at all conscious of them, they are but faintly and obscurely represented.

If we make a resolution of rising earlier in the morning than usual; if we imprint this determination on our mind, immediately before going to bed, we are almost certain to succeed. Now it is self-evident, that this success cannot be ascribed to the efforts of the body, but altogether to the mind: this, probably, during sleep perceives and computes the duration of time, so that it makes an impression on the body, whereby we are enabled to awake at an appointed hour. Yet all this takes place, without our being conscious of it, and the representations remain obscure.

Many achievements of art are so complicated, that a variety of simple conceptions are required to lay the foundation of them; yet the artist is almost entirely unconscious of these individual notions. Thus, a person performs a piece of music laid before him, without being obliged to reflect, in a conscious manner, on the signification of the notes, their value, and the order of the fingers he must observe; nay, even without clearly distinguishing the strings of the harp, or the keys of the harpsichord.

chord. We cannot attribute this to the mechanism of the body, which might gradually accustom itself to the accurate placing of the fingers. This could be applied only where we play a piece of music, frequently practised; but it is totally inapplicable to a new piece, which is played by the professor with equal facility, though he has never seen it before. In the latter case, there must necessarily arise a representation, or an act of judgment, previous to every individual motion of the fingers.

These arguments, I hope, sufficiently evince the reality of such obscure notions and representations, as lay the ground-work of all our dreams.—That among the thousands and millions of fanciful and supposed ominous dreams; some are occasionally realised, is not a matter of astonishment; but many people, particularly the victims of the lottery, find rather frequently reason to regret, that these omens are not always to be depended upon; if those deluded visionaries would allow themselves to reason, and to calculate, they would discover, that there are as many chances against their dream being realised, as there are against their ticket turning up a twenty thousand pound prize.

Before leaving this subject, I shall relate an extraordinary dream of the celebrated Italian, GALILEO. When this great man, at a very advanced age, had lost the use of his eyes, he was once conducted in his walks over a beautiful plain, by his pupil TORICELLI. “Once,” said the aged sage,

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“ my eyes permitted me to enjoy the charms of these fields. But now, since their light is extinguished, these pleasures are lost to me for ever. Heaven justly inflicts the punishment which was predicted to me many years ago. When in prison, and impatiently languishing for liberty, I began to be discontented with the ways of Providence ; *Copernicus* appeared to me in a dream ; his celestial spirit conducted me over luminous stars, and, in a threatening voice, reprehended me for having murmured against him, at whose *fiat* all these worlds had proceeded from nothing. A time shall come, said he, when thine eyes shall refuse thee to contemplate these wonders.”

After this long, though I hope not uninteresting digression, I proceed to state the consequences arising from too much or too little sleep.

To continue in a waking state, beyond a proper time, consumes the vital spirits, disorganizes the nerves, and causes so many uneasy motions, that a considerable while must elapse, before we can fall asleep, namely, until their greatest violence has abated. The fluids of the body become acrid, the fat is consumed, and there arises at length an inclination to vertigo, violent headach, anxiety, actions without connection, without design, without consistency. Those who indulge themselves in much sleep, are rarely liable to very strong passions. Persons, on the contrary, who sleep too little, frequently acquire a violent and vindictive temper. Long
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waking is capable of changing the temper and disposition of mind, of the most mild and gentle ; to effect a complete alteration of their features, and, at length, to generate the most singular whims, the strangest deviations in the power of imagination, and, in the end, absolute insanity.

Excess of sleep, however, is not less prejudicial. The whole body sinks gradually under a complete state of inactivity, the solid parts become relaxed, the blood circulates slowly, and remains particularly long in the head : perspiration is disordered, the fluids are incrassated, the body increases in fat and thick humours, is rendered incapable of mental exertion, the memory is weakened, and the unhappy sleeper falls into a thoughtless lethargic state, in which his sensibility is, in a great measure, destroyed. People troubled with hypochondria and hysterics do themselves much harm by sleeping too long, especially in the morning, when the body is much weakened by its too long continuance in a heated and corrupted atmosphere. To such individuals, also, it is dangerous to remain for a length of time in a state of inactivity. Indeed, excess in sleeping is detrimental to the muscular power of every person ; to the phlegmatic, in particular, whose fluids will thus soon be universally corrupted ; sanguine temperaments also become too full of blood by it. The melancholy, whose blood circulates slowly, must suffer inconveniencies in their secretions and excretions by this indulgence ;

and we generally find, that long sleepers complain of costiveness and obstructions. Early rising, and timely going to bed, may alone render them more healthy and vigorous.—If it can be of advantage to any description of persons, to sleep beyond the usual portion of time, it is to the cholic. To sleep immediately after supper, is apt to occasion the night-mare, or a stagnation of the blood, which, by its pressure, produces the sensation or fancy of this troublesome bed-fellow. It is principally the nervous, the weakly, and those of an impaired digestion, who are visited by such terrifying dreams.

The proper duration of sleep, in youth and adults, is usually settled at six or seven hours ; in children and the aged, from eight to nine hours. Yet the individual deviations in the constitution of the body, and its various wants, scarcely admit of any accurate rules. The more bodily weakness we feel, the more we may indulge in sleep, provided it be refreshing. If people in a state of health are perfectly cheerful in mind and body, when they first awake, this is the most certain criterion, that they have slept a proper length of time. We should, however, be on our guard, not to confound the natural wants of the body with a blamable custom. For most people habitually sleep too much, or remain longer in bed than they ought. The principal cause of this destructive custom, undoubtedly, arises in infancy ; when children are permitted to sleep in very soft and heating beds, and encouraged
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to lie longer than is proper, from a mistaken notion that they cannot sleep too much; and not unfrequently, for the same reason, that they are sent to school at a premature age, namely, to keep them from troubling their parents. In this manner, they cannot attain a solid texture of the body, and a foundation is laid for many subsequent diseases. The rickets, very common in many families, in the present age, are powerfully excited by such indulgences, since the general relaxation of the body, and the tendency to profuse perspiration, is thus promoted in an extraordinary degree. At the age of puberty, this effeminacy of the body, and the inclination to sleep, together with the pleasant sensation, which a soft and warm bed affords in a waking state, are certainly the first and most frequent causes of a vice, that might be as certainly prevented by early rising. The gradually rooted custom of sleeping long, is continued to the state of manhood, so that it cannot be relinquished without great struggles, and a firm resolution. Those then, who are not possessed of this firmness, instead of attaining a strong constitution, will acquire a phlegmatic, relaxed, and cold temperament, which renders them irresolute, and incapable of undertaking matters of importance, and from which the mind, by degrees, becomes as indifferent towards every object, as the body is unfit for muscular exertion.—Hence, to listen to the voice of Nature, in this respect, will contribute more to our

well being, than to shorten our repose by many of the usual but violent means of excitement, when the body is in want of rest.—In children, at a very early period of life, no limits of sleep can be prescribed; but, after the sixth or seventh year of age, some regulations become necessary, to habituate them to a certain order. The just proportion of sleep can be ascertained only, by their more or less lively temperament, by their employments, exercise, and pleasures through the day, and according to the more or less healthy state of their bodies. In pursuing this measure, however, we must not attempt to awaken children from their sleep, in a violent or terrifying manner, which is frequently done, and is extremely pernicious.

In a great disquietude of mind, and after violent passions, sleep is the more necessary, as these agitate and exhaust the body, more than the most fatiguing bodily labour. Hence, many people never sleep so sound, as at the time when they are afflicted with grief and sorrow. A fretful and peevish temper, as well as a fit of the hypochondria, cannot be more effectually relieved, than by a short sleep. Frequently, after a sleep, of a few minutes only, we awaken refreshed, we can reflect on our hardships with a calm mind, and again reconcile ourselves to the troubles of life. In such situations, though we should not be able to sleep, even a quiet posture of the body, with closed eyes, is of some advantage. There is scarcely any misfortune so
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great, that it cannot be relieved or alleviated by sleep; as, on the contrary, we should inevitably yield under its pressure, if this beneficent balm did not support us. Yet, frequently too, uneasiness of mind, by its continual stimulus on the *sensorium*, prevents all sleep: hence the unquiet repose and even whole sleepless nights of those, whose heads are filled with cares or important schemes. As, upon the whole, mental labours exhaust our strength more than those of the body, literary men, who employ themselves in long and profound reflections, require more sleep than others. Though some persons, whose body and mind are equally idle, have a greater inclination to sleep, than the lively and laborious, yet it is not so beneficial to them; since they want the necessary condition of health, namely, vigour and activity.

The most healthy and regular liver frequently have an uneasy and too short a sleep: they also require less rest at one time than at another. He who digests easily, stands less in need of powers to supply his losses, and, therefore, of less sleep. After taking aliment of difficult digestion, Nature herself invites to the enjoyment of rest, and to sleep in proportion to the time, which is required to the digestion and assimilation of food.—Excessive evacuations, of whatever kind, as well as intoxication by strong liquors, render additional sleep necessary. In winter and summer, we require somewhat more time for sleep than in spring and autumn; because
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less powers are expended in the latter seasons, and the mass of the blood circulates more uniformly, than in the cold winter or hot summer, when it is either too much retarded, or accelerated.—Yet it is very improper to sit up too late in the long winter evenings, whether at the desk or at the bottle, either of which is more hurtful than in summer, because the want of sleep is then greater. Those who wish to spend the winter in good health, and useful labour, should retire to bed at eight o'clock in the evening, and rise at three or four o'clock in the morning. A winter morning, indeed, is not very charming, but the evening is *naturally* still less so; and there is no doubt, that we can perform every kind of work, with more alacrity and success, in the early morning than at night; and that our eyes would likewise be benefited by this regulation, after sleep has enabled them, to undertake any task in the morning; but they are fatigued at night, from the exertions of a whole day.

Every stimulus may interrupt sleep, or at least render it uneasy, and occasion dreams, the cause of which is frequently owing to an irritation in the stomach, or in the intestinal canal. Dreams are, as it were, a middle state between sleeping and waking, and generally indicate some defect in the body, unless they contain representations, which are founded on the occurrences of the preceding day.

An uneasy sleep, which is obvious from starting up, or speaking in it, and from a frequent change
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of the posture in bed, is at no time a good symptom ; it is as frequently a forerunner, as it is the effect, of disease. It may be owing to the following causes :

1. Emotions of the mind and violent passions, which disorder the vital spirits ;—at one time increase, at another diminish, and sometimes altogether check their influence, and the consequences of which also extend to the whole circulation of the blood. Sorrows and cares produce a similar effect. Hence the nocturnal couch is a very improper place to institute moral researches, or to recapitulate what we have done, spoken, and thought through the day.—To read interesting letters received late in the evening, usually, too, occasions an unquiet sleep.

2. A bad state of digestion, and hard or corrupted food in particular, on account of the connection of the brain with the stomach.

3. A repelled perspiration, if we have not covered ourselves conformably to the climate, season, and weather.—A current of air is, in this case, still more hurtful than actual cold.

4. An apartment or bed to which we are not accustomed, may also produce an uncomfortable sleep, as travellers frequently experience. It is, therefore, a part of a good and healthful education, to let children alternately sleep upon different and more or less hard couches, in various parts of the house, more or less temperate, and to habituate them

them to sleep in a simple but clean bed, in whatever place or situation they may find it.

Debilitated persons hurt themselves much by sleeping during the day, against the order of nature, and keeping awake the greater part of the night. Day-light is most suited to active employments; as the gloom and stillness of the night is to repose. The evening-air which we inhale soon after sun-set, and night-air in general, which is corrupted in the country by the exhalations of plants, is most detrimental to the weakly. The forced wakefulness of those who apply themselves in the night to mental pursuits, is exceedingly hurtful. A couple of hours sleep before midnight is, according to old experience, more refreshing than double that quantity after midnight.

The question, whether to *sleep after dinner* be advisable, must be decided by a variety of concurrent circumstances; custom, bodily constitution, age, climate, and the like.

In a weak and slow state of digestion, after having taken hard or solid food, we may indulge ourselves in a short sleep, rather than after a meal consisting of such nourishment, as by its nature is easily digested, and liable to corruption. In this case, digestion ought to be assisted by a somewhat speedier and increased motion. Debilitated young people, in particular, should not sleep too much, though their weakness incite them to it; for the
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more they indulge in it, the greater will be their subsequent languor and relaxation.

Individuals of a vigorous and quick digestion may undertake gentle, but not violent exercise, immediately after meals, if they have eaten food that is easily digestible, and which requires little assistance, but that of the stomach and its fluids. And even such persons, if they have made use of provisions difficult to be digested, ought to remain quiet after dinner, and may occasionally allow themselves half an hour's sleep, in order to support digestion.

To rest a little after dinner, is further useful to dry and emaciated persons, to the aged, and people of a hot disposition; to those who have spent the preceding night uneasily and sleepless, or have been otherwise fatigued, in order to restore regularity in the insensible perspiration; but in this case the body must be well covered, that it may not be exposed to cold. Such as are fond of sleeping at any time of the day, are usually after it more indolent and heavy than before. A sleep after dinner ought never to exceed one hour. It is also much better sitting than lying horizontally; for, in the latter case, we are more subject to fluctuations of the blood towards the head, and consequent headaches.

Much depends upon the manner of lying in bed, and on the posture to which we accustom ourselves. To lie on the back, with the arms over the head, stops the circulation of the blood to the
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arms, and is not unfrequently productive of serious consequences. It is equally hurtful to lie in a crooked posture, or with the breast very low and bent inwards; for the intestines are thereby compressed and obstructed in their motions, and the blood cannot conveniently circulate downwards; whence may arise giddiness and even apoplexy. Lying on the back is equally pernicious, and produces frightful dreams, together with many other inconveniencies; the reverse posture is likewise noxious, as the stomach is thus violently oppressed, the free respiration much impeded, and the whole circulation of the fluids in the chest and abdomen absurdly prevented, to the great injury of health.

The most proper posture, then, is that on one side, with the body straight, the limbs slightly bent, (not stretched, because they ought to rest,) so that the body may lie somewhat higher than the legs. When the head is laid high, a short sleep is more refreshing than a longer one with a reclined head. To healthy people it is a matter of no consequence, on which side they lie, and they may safely, in this respect, follow their own sensations. Some dietetical observers allege, that it is better to lie in the evening on the right, and in the morning on the left side; that in the evening the food may more readily leave the stomach, and afterwards this organ may be better warmed by the liver.

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In the evening, we should eat little and light food only, wait for its digestion, and consequently not lie down till two or three hours after supper. The mind ought to be kept quiet and cheerful, previous to going to rest: we should then, as much as possible, avoid serious and gloomy thoughts, which require reflection and exertion. It is therefore a pernicious and dangerous practice, to read ourselves asleep in bed. We would do much better, to exert ourselves a little before bed-time, by walking up and down the room.

Sleep without dreams, of whatever nature they may be, is more healthful than when attended with these fancies. Yet dreams of an agreeable kind promote the free circulation of the blood, the better concoction of food, and a due state of perspiration. The contrary takes place in unpleasant dreams, as these excite anxiety, terror, grief, fear, and the like. In such cases, they are of themselves symptoms of irregularity in the system, of an approaching disorder, or of an improper posture of the body. The functions of the body before mentioned are impeded by such dreams; the vital spirits, which ought to be restored and cherished, are again dissipated by the emotions of the mind, so that neither this nor the body are refreshed.

In order to preserve the body warm, we make use of feather beds and covers. In summer, at least, we ought to sleep upon matresses. It is a
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most essential requisite to every person, who wishes to lead an agreeable, active, and useful life, to provide himself in time with a *proper* couch. To insure all the advantages to be derived from this quarter, nothing is better than a matrafs filled with horse-hair, or if cheapness be an object, with dry moss, at least six inches thick. Several of such matrasses may be placed one above another; the bolster ought to be well stuffed and elastic; in winter with feathers, and during the summer with horse-hair, more or less high, according to circumstances, but always so that the head lie considerably more elevated than the breast and the rest of the body. The cover should never be stuffed in too closely, that the access of external air may not be altogether excluded. If we make use of a bedstead or a sofa provided with steel-springs, one of the matrasses above described, with a similar bolster, and a light cover of a double blanket, will be found sufficient. These beds are not only the most convenient to early risers, but also the most suitable to a healthy state of the body.—The higher classes of society in Ireland appear to be so much convinced of the salubrity of this method of sleeping, that their children, instead of being placed on enervating feather-beds, are habituated to sleep upon bags filled with cut straw, with some blankets laid over the bags for softness, and but slightly covered. I understand, that this praiseworthy practice is becoming every day more general.

neral. Indeed, there is no doubt that the muscles and nerves are more braced by a proper elastic couch, than either by the most exquisite Norway downs, or the most powerful tonic or strengthening remedies taken internally. Yet these remarks apply only to the healthy state of the body, when nature requires no additional aid or precaution, in managing the organs of perspiration.—Every bed ought to be so regulated, that it may slope down very imperceptibly towards the feet, and if the particulars before stated be attended to, a healthy person will never sleep too long in it; he will generally awake in six hours, or somewhat later, feel himself refreshed, rise with cheerfulness, and fit to undertake any exertions, either of body or mind.

What has been remarked in a former Chapter of Dress, and the advantages derived from covering the skin with animal wool, particularly in weakly and infirm people, is likewise applicable here, with respect to the dress, and the immediate covering of the skin, when in bed.—Though we usually undress ourselves as far as the shirt, partly for the sake of cleanliness, partly with the view of relieving the body of every pressure and incumbrance, and of promoting a free circulation of the blood; yet we should be on our guard, that we may not materially hurt ourselves by a sudden exposure to the air, when in the act of undressing, especially after the hot and sultry days of summer. A long and commodious night-gown

of flannel would be a proper night-dress; in particular for those who retire to their beds immediately after the bath, in order to preserve a gentle degree of perspiration. The head should, on no account, be covered with a warm flannel or worsted night-cap, as it were to make a vapour bath of it; but the thinnest cotton or linen cap is fully sufficient.—The consequences resulting from the pernicious practice of keeping the head too warm, have been explained on a former occasion.—The shirt-collar should be loose, the wristbands open, and if from a bad habit we are once accustomed to wear neck-cloths in the night-time, they should be tied as loosely as possible.—Persons who are naturally chilly in the lower extremities, or are liable to pains of the stomach and abdomen, would do well to sleep in woollen stockings, but not in the same which they have worn through the day.

The *feather-beds*, in which we usually sleep, are certainly hurtful in many diseases, some of which they may even produce. For they absorb or imbibe the perspirable vapours thrown out of the body, without our being able to clean them of these impurities, which are again re-absorbed and re-conducted through the pores, to the great detriment of health. For this reason, mattresses filled with horse-hair, or moss, are in every respect preferable. But, as many individuals have not sufficient resolution to use these, or are apprehensive of the consequences attending a sudden change, they

they may at least cause their feather-beds to be frequently and carefully shaken, aired in the sun, and provided with a new covering. For the same reason, the bed ought not to be made immediately after rising, as is generally practised; but the clothes should be taken off, spread out, and not returned to the bed, until the time of going to rest draws near. Further, it is highly improper to sleep in beds overloaded with clothes: they heat the blood more than is consistent with health, and produce an immoderate and enervating perspiration, which still more weakens the organs already relaxed by sleep.

To let down the curtains of a bed, during sleep, is pernicious to health, because the copious exhalations then taking place, cannot be properly dissipated, and are consequently again inspired. It is also equally wrong, to hide the head almost entirely under the coverings. Persons who cannot sleep without curtains, should at least tuck up the lower ends of them, or place them over chairs, so that they may not lie close to the cover of the bed, but admit a more free access of air;—that side alone, which is next the wall, ought to be entirely covered with the curtain.

For similar reasons, the large common sleeping-halls, or wards in public schools, as well as in hospitals, are extremely prejudicial to health; though they may be necessary evils, and not be easily remedied in the great seminaries of education.

Neither the most healthy situation; high, lofty, and spacious apartments; nor the daily practice of airing and cleaning them, are sufficient to counteract the bad effects arising from this baneful method of crowding so many breaths into a common atmosphere.

From these considerations, as well as in many other respects, the sleeping-together in one bed, whether among children, or adults, is at best a disgusting and immoral custom; beside the positive disadvantages it has with respect to health. Unless poverty or necessity render this usage unavoidable, it ought not to be practised, either among married or other persons, and still less among children. It has been remarked, even in the domestic œconomy of barbarous nations, that, in general, every individual has his separate couch.

The old custom of warming the bed, before it be used, also deserves to be condemned; as it has a direct tendency to produce weakness and debility. This will be still more dangerous, if it be done with a charcoal fire, which by its poisonous vapours may prove very destructive. A person who is accustomed to sleep in a cold bed, will not feel much inconvenience in the severest cold; for, after being a short time in bed, the natural warmth of the body will overcome it: as, on the contrary, those who sleep in a warmed bed, will be the more liable to feel cold, as soon as this artificial heat is dissipated.

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If it can be avoided, the bed-room ought not to be on the ground floor, nor towards the north. Many people prefer this situation in summer, on account of the cool air; they should, however, consider that, in such an apartment, the morning as well as the night-air, is damp and unwholesome. It rather ought to be exposed to the early rays of the sun, which have the salutary effect to rouse man in a state of health at a proper time, to enliven, strengthen, and incite him to leave the bed, after having refreshed himself by rest. It is, further, more advisable to endure a moderate degree of heat, which may be modified at pleasure, by various means, than to inhabit damp and low-situated apartments, from which the moisture cannot be easily expelled in summer.—A spacious and lofty room should always be chosen for a bed-chamber; for small closets, and, above all, concealed beds are extremely objectionable.—The windows should never be left open at night; and as damp rooms, upon the whole, are very prejudicial to health, we ought to pay particular attention, that the bed may not be placed against a damp wall. It is in every case preferable to place the bed so, that all the sides of it stand free, or towards the middle of the room.—This method of placing the bedstead, in or about the middle of the room, has another advantage which, with timorous persons, is perhaps of importance. It is well known, that a flash of lightning, if it unfortunately enter through a win-

dow, will take its direction by the side of the walls, and not touch any thing placed in the middle of a room.

Lastly, no burning candle or rush-light should be suffered in a bed-room ; for it not only corrupts the air in a very considerable degree, but it disturbs and prevents the rest of those whose sleep is uneasy, particularly the aged. In a dark apartment, sleep generally takes place without much invitation ; as, on the other hand, the light of a candle stimulates the brain, consequently the whole nervous system ; and the approaching comforter, whose arrival we so fondly wish, is thereby prevented, or easily interrupted, and banished to calmer regions.



C H A P. VIII.

Of EVACUATIONS;—their different species, as well as their peculiar nature investigated; together with the necessary directions for their management, according to the different states of the body.

THE evacuations of the body, from its superfluous, corrupted, and noxious particles, are no less necessary than its nourishment. The same power which changes and assimilates our food and drink, likewise effects the due and timely evacuation of what is secreted. It is an object of the first consequence, that nothing remain in the body, which ought to be evacuated; and that nothing be ejected, which may be of use to its preservation. How many persons do we find complaining of bad health, notwithstanding every attention they pay to the air they breathe, to aliment, exercise, sleep, &c.; while others enjoy a complete state of health, though totally careless with regard to these particulars. Every thing, indeed, depends on a proper state of the evacuations.—If these be disordered, the most rigorous observance of all diet-rules is insufficient to insure our health; as, on the contrary, most of those rules may be neglected, for some time, without any injurious consequences, if the evacuations be duly attended to.

Nature removes not only the noxious matter, or such as is in a state of corruption, but likewise the useful fluids, if they become too abundant; for instance, the milk, the semen, the blood. In such case, therefore, these must be considered as objects of evacuation, equally natural and salutary.

By *stool*, there are evacuated the thick and feculent remains of assimilated food; as every article of aliment contains more or less dregs, and as the smallest part of them only can be changed into the milky fluid, or chyle.

By *urine*, we eject the oily and saline particles secreted from the blood, in a diluted state; which prevents these particles from injuring the external membranes, by their irritating acrimony.

By *insensible perspiration*, which is carried on through the smallest orifices of the pores, there are evaporated the most subtle and noxious particles of the fluids; by the acrimonious nature of which, if they were retained within the body, the foundation would be laid for its total corruption.

These are the three principal emunctories, by which nature expels all crude and acrid substances, unfit to afford nutriment to the body. Accordingly as they are disordered, diseases of different degrees of malignity and duration will necessarily arise.—Nature also frequently relieves herself by more unusual channels; such are, the bleeding of the nose in plethoric young men, the hemorrhoids with which persons of a middle age are sometimes troubled,

troubled, the various ulcers common to those whose fluids are in an impure state, the excretions of saliva, and the expectorations of others, &c. By a premature suppression of these troublesome but salutary efforts of nature, great mischief may be produced to the individual.—Many persons perspire much under the arm-pits, others in their hands or feet; others again are subject to eruptions in the face or other parts of the body: such canals, however, if nature be once accustomed to throw out thereby certain useless and hurtful particles, cannot be hastily stopped, without occasioning greater and more dangerous inconveniencies;—cleanliness, in the strictest sense of the word, is almost the only safe remedy to counteract their fatal effects.

Of Evacuations by Stool.

As the food and drink we consume every day, necessarily deposits useless matter, a daily opening by stool is extremely salutary; particularly to those who are subject to costiveness and the many disagreeable consequences thence arising. Of these I shall only enumerate frequent headaches, difficult breathing, flatulency, eructations, and spasms: hence peevishness of temper, general lethargy, and, at length, hypochondria;—the abdomen of such persons feels tumid or puffed up; the circulation of the blood in the intestinal vessels is nearly checked; and, consequently, the general circulation interrupted,

interrupted. These complaints, sooner or later, certainly attend habitual costiveness; especially if no other kind of evacuation, as that by urine, or insensible perspiration, be in an uncommon degree increased.

In healthy individuals, the evacuation by stool usually takes place once or twice a-day; and, according to the habits of the person, either in the morning or evening. Those who are troubled with costiveness, should not upon any account neglect to visit the customary retreat, regularly every morning at a fixed hour, and thus endeavour to promote this necessary evacuation by proper efforts, though they might not, at the moment, feel much inclination to that purpose; for, it is well founded on experience, that nature, at length, will be habituated, by perseverance, to observe a certain regularity in this respect. The most proper time for these attempts, is early in the morning, or late in the evening.—Whatever dietetic means may be adopted to promote stool, ought to be employed either from three to four hours previous to the time we wish to succeed in it, or immediately before going to bed. If in the morning, we ought to rise early, to take first a slice of bread with much butter; then eat some boiled prunes; drink two or three cups of the decoction; and, if necessary, assist the operation of the whole with a tea-spoonful or two of cream of tartar in treacle. Thus prepared, we ought to walk a little in the open

open air, or, if the weather be unfavourable, about the room; to rub the lower belly with the palm of the hand; and, when we sit down, to retain the breath, by frequently, though moderately, inspiring; and, lastly, to change the posture of the body, from a perfectly straight to a crooked and sidelong direction, until we succeed in the attempt. Although these trials should repeatedly fail, we must not be discouraged from persevering in them; nor ought we, without absolute necessity, to choose any other than the wonted hour to attain the end proposed; so that this, at length, may become the only time, when nature shall spontaneously assist our endeavours. During these practices, however, the choice of our diet is of the greatest moment; as we can powerfully promote the desired end, by living chiefly upon rye-bread, spinage, boiled fruit, particularly prunes, decoctions of currants, the sweet and emollient vegetables, and occasionally salted meat; the last of which should be assisted with much drink, not of the spiritous kind, but rather of a mild and aperient nature, such as sweet table-beer, whey, infusions of malt, apples, pears, and the like.—Yet, it deserves to be remarked, that if every effort of this kind prove abortive, the voluntary exertions in promoting stool should not be carried to an extravagant degree; as by such unnatural pressure we may bring on ruptures, the bursting of veins in the rectum, or the piles. Hence it is more advisable to abstain, for some time,
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from all crude and solid aliment, and to use no other but such articles of food and drink as have been before pointed out. And, if this also should not be attended with the desired effect, we may then have recourse to the mild purgatives, such as rhubarb, fenna, cream of tartar, and the neutral salts.

While too much rest, and a sedentary life, prevent this species of daily evacuation, gentle exercise, accompanied with serenity of mind, almost certainly promote it. In many families, costiveness is an habitual and hereditary distemper. Sometimes, too, it originates from a weakness of the intestinal canal brought on by diseases, but more frequently from the habitual use of certain articles of food and drink; for instance, the lean flesh of quadrupeds, much game, the leguminous vegetables, red port-wine, strong and bitter malt-liquor, and the like. Hence the predisposing cause of the complaint should always be attended to. If it arise from weakness; red wine, bitter ale, and other strengthening means, are well calculated to remove it. In every instance, frequent exercise in the open air is extremely useful. Persons living sparingly on animal food, and who are otherwise temperate in their passions and desires, are seldom deprived of this benefit of nature. And, even though they should be without it for two or three days together, they have little to apprehend from such irregularity; for, as they do not wantonly overload their stomach, the accumulation of impurities cannot

not be considerable. Where weakness and atony, or laxity of the intestines, are the causes of a costive habit, the external use of cold water, by affusion on the lower belly, or merely washing it with that fluid, is frequently preferable to all other dietetic remedies. This is one of the most simple means of preventing painful costiveness; though it ought not to be applied indiscriminately, and least of all in those cases where the use of the cold bath is improper and hurtful.—If debility and relaxation of the intestinal canal be the cause of costiveness, clysters of cold water alone generally are productive of singular benefit; yet, these also cannot be used without many exceptions—not, for instance, by females during the menses, by persons afflicted with the piles, or having weak lungs, nor in certain kinds of colics and spasms.

The discharges by stool ought to be neither in a too liquid nor too dry state. Strong labour, heating drinks, long fasting, render them disagreeably hard, even in the healthiest individuals; on account of the feces remaining too long in the region of the lacteals, so that the nutritious or milky part of the concocted mass is exhausted to the last drop, and there remains behind no other but dry excrementitious matter. These stools, therefore, are frequently a symptom of good digestion, such as attends sound constitutions in general. Too dry excrements, in the form of balls, especially in weakly individuals, occasion headach, inflammation

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of the eyes, febrile complaints, hemorrhoids, ruptures, paralytic affections, and frequently produce flatulency and spasms, in persons subject to hysterics and hypochondria: nay, the very suppression of flatulency is extremely dangerous. Those who are apt to delay going to stool, expose themselves to many serious inconveniencies. When this sensation is lost, it does not usually return for some time. The feces collected in the intestinal canal powerfully distend it, give rise to the blind hemorrhoids, and sometimes even to a falling down of the anus; the excrements become too dry, and their re-absorbed fluid parts irritate and corrupt the blood, and produce many obstinate distempers. If a person has been costive for several days, the inclination to go to stool sometimes disappears, until restored by artificial means. Loose and too frequent stools are common with those, who take more aliment than their stomach can digest, so that the food, from the stimulus occasioned by its corruption in the alimentary canal, is too soon ejected, without being duly assimilated. Hence, weakly persons, who are immoderate in eating, generally are thinner and less muscular than others, who observe a regular and temperate diet. The stools are a tolerable criterion of the quantity and quality of the food we have taken, and whether the digestive powers be adequate to its concoction. For, in weak intestines, the unassimilated matter of food turns acrid, and contributes nothing to the nourishment

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of the body. Thus it happens, that debilitated individuals, and such as are of a phlegmatic habit, continue lean and emaciated, whatever quantity of food they consume. For this reason, they ought to live principally on milk, eggs, broths, tender meat, emollient vegetables; and to eat only when they feel a true appetite, and after moderate exercise.—It is not the man who takes comparatively little food, that can be called a moderate liver; but rather that person who makes use of no more aliment, than he is able to bear and to digest. Thin and copious stools, however, are a direct proof of the contrary.

Some are accustomed to go to stool more than once a-day, while others are relieved only every second day, and yet enjoy a good state of health. It is, however, more desirable and wholesome to have a regular evacuation every day. Children ought to have more frequent openings than adults: two or three discharges a day are conducive to the health of the former. Aged persons, in general, have but one stool in a day. The air we breathe, makes, in this respect, a remarkable difference. The more we perspire in summer, the fewer are the evacuations; as, on the contrary, moderate exercise is productive of more regular excretions, than that which is too violent. Robust and muscular individuals perspire more than the weak and enervated; hence the losses of the former, by other excretories, are more limited; while the latter,

whose fluids are not duly determined to the surface of the body, have more frequent openings by stool.

Obstructions and costiveness, of which many persons now complain, are owing to a variety of causes, but chiefly to our luxurious manner of living, and to the custom of making too many meals through the day. The time requisite to the digestion of a meal cannot be well ascertained, as some stomachs concoct quickly, others slowly; and there is a remarkable difference in the degrees of digestibility, among the various articles of food; the nature of which has been already pointed out in the fifth Chapter. But this may serve as a general rule, that we ought never to take a new supply of food, till the preceding meal be digested. Some moderate livers, after having transgressed their usual measure, do not feel any inconvenience from it, till after two or three days, when they are troubled with copious evacuations, headach, uneasiness and dejection of mind. Such excesses are frequently accompanied with serious consequences, of which costiveness is only the forerunner. Neither the emetics, or laxatives, to which the glutton has recourse, nor the fashionable stimulants and strengthening bitters, can remedy or prevent the ultimate effects of such brutal habits. The emetics and purgatives, in a high degree, weaken the first passages, and lay the foundation of constant obstructions; while the stimulants deprive the intestines still more of the necessary humours, and render the
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evil much greater. The most proper means of preventing these hurtful consequences, are the following :

1. A due degree of bodily exercise, by which the muscular power is invigorated, the nervous system strengthened, and the circulation of the blood promoted.

2. We ought to take a proportionate quantity of drink to our victuals ; a circumstance not always sufficiently attended to, by persons of a sedentary life. Drinking dilutes the food, and softens the bowels. A weak, well-fermented, and well-hopped beer, is an excellent beverage : so is water with the addition of a little wine. Warm drinks, on the contrary, have a manifest tendency to increase obstructions, by the relaxation they produce in the intestines.

3. Let us choose the quality of our food, according to our constitutional wants. Those who cannot digest well, ought to avoid all thick mealy dishes, pastry, onions, warm and new bread, and such as is not thoroughly baked. Costive persons frequently complain of an acid, generated in their stomach ; again others, on account of this acid, are subject to loose and very frequent stools. Vinegar and tart wines are but rarely the cause of this acidity ; never, indeed, except when they disagree with the stomach. New wines, on the contrary, as well as vegetables of an acescent kind, and particularly long kept and roasted fat meat, have the

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strongest tendency to produce acidity, the heart-burn, and, at length, obstructions in some constitutions, and diarrhœas in others. The proper articles of food, in such cases, are green herbs, carrots, sugar-peas, french beans, parsley-roots, the scorcenera, artichokes, horse-radish, mustard-leaves, and similar plants, boiled soft in broth, sufficiently salted, and without the addition of fat or butter. Beside these, a small quantity only of meat ought to be used, and this should be tender; no fat fish, nor game kept too long, for the purpose of rendering it mellow. Lastly, all kinds of fruit ought to be eaten boiled rather than raw.

4. We should not too much indulge in sleep: this unprofitable custom, particularly sleeping after dinner, is hurtful to persons whose digestion is languid, and whose evacuations are preternaturally slow. During sleep, all the motions in the system are performed with less vigour, and more tardily: and, in this respect, to keep awake may be considered as a species of exercise; as the nerves, in that state, are more active, and the circulation of the blood is carried on with greater energy.—In a similar manner, as evacuations by stool can be suppressed, by sleeping an improper length of time, for instance, ten or twelve hours instead of seven or eight; so likewise we may prevent these salutary discharges, by sitting down to any inactive employment, previous to the usual inclination to retire to stool.

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If it be our wish to preserve health, we ought not only to guard against the effects of costiveness, but likewise to prevent, by all proper means, too frequent excretions. Copious evacuations of this kind exsiccate the body, and deprive it of that strength, which is necessary to supply its wants. Persons subject to diarrhœa, cannot be too cautious in using watery, saline, and easily fermentable articles of food and drink, as likewise in avoiding violent fits of anger and other passions. On the contrary, they will more promote their health, by using provisions of a drying nature, drinking no other but a well-fermented, bitter beer or ale, and, if they can afford it, good old wine:—all of which have the beneficial tendency to promote perspiration, and thus prevent the state of superfluous humidity in the body. Due and daily exercise is here, likewise, of considerable efficacy; for, if too copious evacuations proceed from a relaxed state of the intestines, the fibres of these, as well as of the whole body, are thereby invigorated; and, if irritating or peccant humours should be the cause of the complaint, nothing is better calculated to expel them by perspiration, urine, or stool, than spirited and persevering exercise, until the body be tolerably fatigued. Yet, in this case, we must not attempt to remove or suppress this material stimulus by astringent remedies; for, instead of evacuating the noxious matter by the proper emunc-

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tories, such medicines will necessarily produce dangerous, and often fatal diseases.

It would be a desirable object, in houses which are not provided with water-closets, that every individual were furnished with his own night-chair; as most of the common places of retirement are literally ventilators, where some parts of the body are exposed to a current of air, and frequently the way is opened to disorders, particularly in persons subject to colds, and all other complaints originating from suppressed perspiration; accidents, which may injure still more those, whose lungs are not perfectly sound. Men who are troubled with the piles, and, above all, women during the menses, ought to be very cautious in resorting to such places.—In the usual privies, there generally prevails in summer a pestilential fetor; so that it becomes almost impossible to wait here for the proper evacuation, both on account of the disagreeable smell, and the fear of being infected with disease.

After every stool, there is a slight downfal of the anus; a circumstance, which renders some precaution in the cleaning of it necessary. The paper used for that purpose ought to be previously examined, whether its surface contain any rough and loose particles, which would be immediately communicated to the anus, and might gradually produce the blind hemorrhoids.—Lastly, all unnatural forcing and straining of costive persons, is not only
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useless, but may also be attended with dangerous consequences. It is, therefore, more advisable to use all proper means of keeping, if possible, this important excretion in due regularity; and, to attain that desirable end, it is further necessary to abandon all strait garments, especially laced stays, and tight waistbands.

Of Urine.

In a state of health, this discharge takes place oftener than once in a day. The urine of those who live moderately, and take proper exercise, if examined in the morning after rising, and after having spent a quiet and comfortable night, is thin, clear, of a straw colour or inclining to yellow, with a white, slight, and uniform sediment rising in the middle, makes no foam, but what immediately vanishes, and has no unusually disagreeable smell. If it correspond to this description, it is a symptom of good digestion, and of the body being free of impurities. The quantity of this discharge, in persons otherwise healthy, depends on their constitution, the season, and the weather. It is less in warm than in cold climates, on account of the increased perspiration. In winter, we generally make more urine than in summer; and this nearly in proportion to the degree of insensible perspiration. In spring and autumn it is probably voided in an equal proportion.

We may judge (not prognosticate) respecting the state of the body, from the appearance of the urine in the morning only; for, during the day, this would be a fallacious criterion, from the nature and quantity of food and drink we consume. The ancients were extremely fond of predicting the different states of health and disease in the human body, from the appearances observed in the urine. Among the moderns, who are better acquainted with the anatomy and physiology of the human body, these appearances are not implicitly attended to; as they have frequently been found to mislead the observer. Yet, it is certain, that the early morning urine, if allowed to stand for an hour or two, exhibits some phenomena, which render it an object worthy the attention of the medical practitioner. Thus, a thin pale urine, which is voided by the hypochondriac, the hysteric, and those who are afflicted with spasms in the abdomen, indicates great weakness, or the approach of cramps, originating from a contraction of the smaller secretory organs. It is likewise of a whitish colour, after taking much watery drink. In debilitated individuals, the urine is foamy, and this froth remains on the top for a considerable time; because it abounds in tough and viscid particles. The health of such persons, however promising in appearance, is by no means permanently established.—The urine is of a red colour, after too little drink, or after drinking spiritous liquors, after violent exercise,

ercise, profuse perspiration, and after having spent a restless night. It presents a sediment resembling brick-dust, when the stomach is corrupted, the tongue white with a yellowish taint, and covered with viscous matter. According to the higher or more faint colour of the urine, in an ordinary state of health, the body may be considered as being more or less vigorous. If, after long standing, no sediment be deposited in it, great weakness is also indicated: the conclusion is more favourable, although the urine be thick and sandy, if a cloud be observed swimming in the middle.

It is, upon the whole, less dangerous to suppress evacuations by stool, than those by urine. If this remain too long in the bladder, it becomes acrid and corrosive. If the inclination to make water is accompanied with a discharge of a few drops only, it is called a *strangury*; if the difficulty of voiding it is attended with pain, it has received the name of *dysuria*; and, if a total suppression of it takes place, it is then called *ischuria*. These accidents are frequently the effects of some malt-liquors, or of certain articles of food, particularly of eating vegetables, containing much acidity. In the beginning of such painful complaints, relief can be afforded by fomenting the patient, about the genitals, with flannel-cloths as hot as he can bear them, by keeping him sufficiently warm, and allowing him plenty of warm diluent drink.

Although the quantity of the urine to be voided through the day cannot be accurately ascertained, yet this evacuation ought always to be proportionate to the drink we have taken, and to the greater or less degree of perspiration. If we perceive a deficiency in this discharge, we ought to take moderate exercise, to drink light, thin, and acidulated beverage, and to eat a variety of such herbs and fruits, as possess diuretic virtues: of this nature are, parsley, asparagus, celery, juniper-berries, strawberries, cherries, and the like. We should further be careful, not to retain the urine too long; a practice which would occasion relaxation and palsy of the bladder, so that it will be emptied with increasing difficulty, and may at length produce the gravel or stone.

Many maladies may arise from too small a quantity of urine voided. Hence the necessity of attending to this excretion, from which we may frequently discover the cause of the disease. The relative state of vigour or debility in the individual, the mode of life, more or less drink, dry or damp weather—all produce a difference in the quantity of this discharge. Robust persons make less urine than the debilitated; a copious emission of it is always a symptom of a relaxed body, which is not possessed of sufficient energy, to expel its noxious particles by the transpiration through the cutaneous vessels. The more exercise we take, the less we lose

lose by the urinary passages; as they are drained by the pores. Cold and moist air checks perspiration, but promotes the excretion by urine. When this canal is suppressed, the bladder sometimes becomes so much distended that it bursts, as may easily happen to parturient women; and hence arise incurable *fistulæ*; or if the passages be obstructed, the urine retreats into the cellular texture of the whole body, and penetrates even into the cranium. Women, however, are able to retain it longer than men.—Too copious a flow of it, on the other hand, constitutes a peculiar disease, known by the name of *diabetes*, which not unfrequently proves fatal to the sufferer, after he has discharged several gallons a day, for a considerable length of time.

Among the rules and cautions for the proper management of this evacuation, it deserves to be remarked, that it is hurtful to make water too often, or before a proper quantity of it be accumulated in the bladder. By such practice, this vessel gradually contracts into a narrower compass than is assigned by nature, and cannot again be easily distended. Too long a retention of urine, on the contrary, preternaturally enlarges the bladder, weakens its muscular power, and may, with the advancement of age, occasion *ischuria* or a total suppression of it; besides which it encourages the deposition of mucus and sand in the urine, while it inevitably leads to that troublesome and painful complaint, the stone.

Of

Of insensible Perspiration.

Of all the natural evacuations, that by insensible perspiration is the most important. None is so extensive, none is carried on with less interruption, and none rids the body from so many impurities, particularly from acrid and thin humours, as that we are now to consider. The health of man chiefly depends on the proper state of this function: the irregularities occurring in it, occasionally produce peevishness of temper, headach, disturbed sleep, heaviness in the limbs, &c.; as, on the contrary, we find ourselves most lively and vigorous, when it is duly and uniformly performed. A person of a middle size, and in perfect health, perspires, according to the calculation of some, from three to four pounds weight, according to others, about five pounds, within twenty-four hours. The exudation by the pores is most essential during the night; the noxious particles only are then separated; which separation, on account of the disturbances we are exposed to through the day, cannot be so well effected, as the circulation of the blood is thereby interrupted, while at night it is comparatively more calm and regular;—besides which, the nocturnal perspiration is more copious, from the greater uniformity of the surrounding atmosphere.

Most of the febrile diseases arise from a suppressed perspiration; as the exuded matter is of an
acrid

acid and irritating nature. To transpire beneficially, means, that the impure and pernicious particles only be ejected, in which case the perspiration is invisible and imperceptible. This is so essential a requisite, that the health of the individual cannot long subsist without it. The reciprocal connection between the functions of the stomach, and of perspiration, is so obvious, that if the latter be checked, the former is immediately affected; and the reverse takes place, if the stomach be corrupted.—The more vigorously a person perspires, (it ought to be well remarked, that the question here is not of *sweating*,) the more effectual are the powers of the body, in the concoction or digestion of the alimentary juices; and the more certain it is, that no fluids will accumulate: for such fluids, though refined and subtile, far exceed in weight the more compact and solid parts of the system, so that they would oppress the machine, like a heavy burden, if not evacuated by the pores of the skin. Most individuals, however, are accustomed to direct their attention only to the evacuations of a coarser kind, or such as are more obvious to the senses. But the *insensible* perspiration is of greater moment than all other excretions; and by paying due regard to that function, if it should be accidentally disturbed, we may frequently, and early enough, discover the lurking cause of a distemper, and suppress it, before it has materially injured the body.

Yet,

Yet, even in the most healthy, this perspiration is not at all times, nor at all hours of the day, equally vigorous. It is weaker after taking a plentiful meal, but as soon as the food is digested, we again perspire with increased energy; for the new chyle has been changed into blood, and imparted additional efficacy to the vital powers, as well as to the circulation of the blood itself. As we perspire considerably more in summer than in winter, our mode of life, with respect to sleep, as well as to food and drink, ought to be regulated accordingly. We know from accurate observations, that if we retire to bed immediately after supper, the process of perspiration is checked in a remarkable degree: we also know, that it is highly conducive to health, that this important function of the body be preserved in the most uniform state; it therefore necessarily follows, that, after supper, we ought to sit up at least two hours; and to afford this benefit both to the perspirable and digestive organs, our suppers should not be delayed to the late hours, now so absurdly in fashion.

According to the experiments instituted by different inquirers into the nature of insensible perspiration, this process is most forcibly affected, and sometimes totally suppressed, by the following circumstances:

1. By violent pain, which in a remarkable degree consumes the fluids of the body, or propels them to other parts.

2. By

2. By obstructions of the cutaneous vessels, as is frequently occasioned by the use of salves, ointments, and cosmetics.

3. By severe colds, particularly those contracted at night and during sleep.

4. When nature is employed with other objects. Thus perspiration is weaker during the time of concoction, particularly after using articles difficult to be digested. This is likewise the case, when nature endeavours to promote any other species of evacuation, which more engages the attention of the senses; for instance, vomiting, diarrhœas, considerable hemorrhages, and the like: further, when the efforts of nature are too weak; hence the aged, the debilitated, and poor people, unable to supply the wants of the body, or to pay due attention to cleanliness, perspire less than others: lastly, the same must happen to individuals of a sedentary life, who neglect the necessary exercise of the body; and those likewise who wear too tight garments, and improper ligatures about the joints.

Perspiration, on the contrary, is promoted:

1. By stretching or expanding the limbs; as, by such means, the lungs and muscles acquire additional impulse, and the fluids occasionally stagnating in the smaller vessels, are propelled to the larger veins and arteries, and thus forwarded to the heart; so that this principal muscle is then impelled to extend and contract its ventricles with greater force,

force, and consequently to quicken the whole circulation of the blood.

2. By the lukewarm bath, which is well calculated to soften the skin, and thus to open the pores for a better perspiration.

3. By moderate bodily exercise.

4. By mild sudorific remedies;—and for this reason it is extremely proper, in case of a recent cold, to drink two or three cups of tea, particularly previous to going to bed.

If perspirable matter collect in drops, it *should* then be called *Sweat*, and is no longer a natural and necessary evacuation; on the contrary, we find very healthful and robust persons who seldom or never sweat. By means of this exudation, both noxious and useful particles are at the same time discharged from the surface; the body is weakened; the blood is rendered impure, and the secretion of bad humours is prevented by every violent and unequal effort of the cutaneous vessels. If sweating be carried to excess, it is extremely noxious, and may even be productive of consumptions. By insensible perspiration, on the contrary, the superfluous particles only are expelled; because the circulation of the fluids is slower, and more calm and uniform. This important purification of the blood ought never to be checked: if, therefore, we wish to take a bracing exercise, it should by no means be continued, till profuse perspiration take place.

Cold then only checks perspiration, when it occasions an unusual stimulus on the skin; and if we too suddenly remove from a warm to a cold atmosphere. Hence the necessity of accustoming ourselves, from early youth, to the vicissitudes of heat and cold, of walking every day in the free air, and of washing the whole body, at least once a week, with lukewarm, or still better, with cold water. By this practice the pores are braced, and inured to undergo the different changes of the weather and seasons, without suffering (as most people now do, upon the slightest occasion) by severe colds and catarrhs. It is never too late to begin this strengthening process, by frequently washing and rubbing the whole surface of the body with cold water; for, if cautiously managed in the beginning, it cannot fail to invigorate young persons and adults, as well as the aged.—To sleep in hot feather-beds occasions a constant vapour-bath at night, which again destroys the beneficial acquisitions of the day.—To remove from a cold temperature to a still colder one, is not nearly so hurtful, as to exchange suddenly the air of a warm room, for that of a moist and cold atmosphere. This accounts for the frequent colds caught in summer, even by going from the burning rays of the sun to the cooling shades; and hence, too, the first cold of autumn is most sensibly felt, because we are not then accustomed to it.

Much also, as has been before observed, depends on the nature and properties of our food and drink,

drink, in respect to the state of insensible perspiration. The subtile and rarefied fluids only, not those of a coarse and oily consistence, can penetrate through the skin. Too many fat, viscous, and crude articles of nourishment, such as fat meat, pastry, boiled mealy dishes, smoked hams, sausages, &c. have a strong tendency to obstruct the free perspiration of the body, and consequently also to affect the serenity of mind.

All the depressing passions and emotions are a powerful check to insensible perspiration; as, on the contrary, those of an exhilarating nature may promote and increase it to such a degree, as sometimes to prove the predisposing, though distant, cause of consumptions. Moderate daily exercise is eminently calculated to support this function, and to strengthen the whole body. Cleanliness produces a similar effect; for some impurities continually settle on the surface of the body; and these, if not removed in time, clog the pores, and are so detrimental to health, that they may occasion many obstinate distempers, which might be easily prevented, or at least checked in their progress, by a proper and constant attention to the skin.

Too violent a perspiration indicates great debility of the body, or a laxity of the cutaneous vessels, which may be frequently removed by cold bathing or washing. When persons are troubled with unusual night-sweats, they may remedy this inconvenience (if it be not a symptom of hectic fever)

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by taking, immediately before going to bed, two or three drachms of cream of tartar, in either beer or water. But if this simple remedy, after repeated trials, should prove unavailing, a professional man ought to be consulted; as long-continued night-sweats may in the end produce great weakness, and even consumption.

In most of the common colds, the popular stimulant remedies, such as heating liquors, and particularly sudorifics, are ill-calculated to relieve the complaint. If the patient, at the same time, be troubled with pain in the bowels, headach, has an impure tongue, &c. a gentle laxative will be of greater service than the diaphoretics. But if the stomach principally be affected, if the tongue be clean and the appetite good; two or three cups of warm diluent drink, a tepid bath of the legs, a moderately warm room and dress, gentle exercise, and friction of the skin with warm cloths, are the most proper and generally effectual means of relief.

As the retention of useless and superfluous matter is hurtful, it is not less detrimental to health, if substances not properly designed to be evacuated, are ejected from the body.—Of this kind are bleedings from the nose, the mouth, and the vessels of the anus: though these are not natural evacuations, yet they may be occasionally beneficial, as nature sometimes makes an effort to expel noxious parts by outlets rather uncommon. But these parts or fluids

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thrown out as pernicious, strictly speaking, ought not to exist in the body; and although the evacuation of them be a benefit, it still remains in the end a symptom of disease. If, therefore, such preternatural discharges take place too violently or frequently, they ought to be checked with judgment and circumspection, and we should endeavour to lead (but not to force) nature to a more salutary canal, than that she has chosen, either by accident or wanton compulsion.

Of the Saliva.

The saliva should not be confounded with mucus or slime; the former is a fluid, not intended by nature to be evacuated, as it serves the important purpose of mixing and preparing the food for the stomach; hence it ought not to be unnecessarily squandered by frequent spitting; the latter, mucus, may be safely thrown out as burdensome and offensive. The strange custom of smoking tobacco is, on that account, extremely hurtful, as it weakens the organs of digestion, deprives the body of many useful fluids, and has a direct tendency to emaciate it, particularly in young persons, and those of lean and dry fibres. To these it is the more detrimental, that it promotes not only the spitting of saliva, but likewise other evacuations. This plant is possessed of narcotic properties, by which it produces in those who first begin to smoke it, giddiness, cold

cold sweats, vomiting, purging, and, from its stimulus on the salival glands, a copious flow of the saliva. Frequent and much smoking makes the teeth yellow and black; the clay-pipes are apt to canker the teeth to such a degree as to infect the breath, and produce putrid ulcers in the gums. Delicate persons especially suffer from this ugly habit; as it has a direct tendency, not only to exsiccate their bodies, by contaminating the fluids and rendering them acrid, vitiating the digestion and assimilation of food, but likewise to impair the understanding and to stupify the powers of the mind.—These hurtful effects, however, are less to be apprehended from smoking tobacco, if it have become habitual, and be not carried to excess.—To persons of a middle age, or those of full growth, particularly the corpulent, the phlegmatic, and such as are subject to catarrhal complaints, it may occasionally be of service, if used with moderation, especially in damp, cold, and hazy weather. Yet, they ought never to smoke immediately before or after a meal, as the saliva is materially requisite to assist the concoction of food, which is not accomplished till about three or four hours after eating;—they should smoke slowly; drink frequently small draughts of beer, ale, tea, or other diluting beverage, but neither spirits nor wine; and, lastly, make use of a pipe with a long tube, and employ every time a clean one, as the oil of tobacco, settling on the sides of the pipe, is one of the most acrimo-

nious and hurtful substances, if it should thus be accidentally absorbed, and mixed with the fluids of the body.

Of the Mucus of the Nose.

The secretion of this humour is intended by nature to protect the olfactory nerves : hence, all the artificial means of increasing that secretion are preposterous, unless indicated by some particular indisposition of the body. The remarks, then, made with respect to the saliva and smoking, are also applicable to the mucus of the nose, and the habit of taking snuff. The question here is not of that catarrhal secretion of viscid slime, which is thrown out as useless. Snuff stimulates the mucous membrane of the nose, and, by sympathy, the whole body ; by which the mental powers are in a slight degree excited. If used as a medicine * only, and
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* By the persuasion of some friends, who were anxious to see the farcical performance of an empiric, whose name does not deserve to be recorded here, I this day (September 25th) joined a party, to witness the pretended effects of a certain *snuff-powder*, together with what he calls his *aromatic belts*, which are, at best, but a clumsy imitation of *Meffmer's Animal Magnetism* (*vid.* page 121 *et seq.*) ; and, as such, have not even the merit of originality.—The medicated snuff appears to be an assistant means contrived by this *Charlatan*, to stupify the heads of his patients, who were uniformly of the lowest class. The German adventurer stood in need of no external remedies to affect the nerves of the *Parisian* fanatics, while our London Mountebank, notwithstanding

on occasions that require such a stimulus, it may be productive of some advantage; but, with this intention, a liquid sternutatory deserves every preference to a powder, which, though at first stimulating and occasioning a flow of viscous matter, in the end, always obstructs the nostrils. And, if this stimulus be too violent, it may bring on so profuse a discharge of matter from the delicate membrane lining the nose, as to relax and corrode it, and to produce a *polypus*, or a concretion of clotted blood in the nostrils.

In several diseases of the head, eyes, and ears, however, the taking of snuff may occasionally supply the place of an artificial issue; though an extravagant use of it will most certainly produce a contrary effect; namely, accumulation of matter in the head, bleeding of the nose, and other complaints. Further, it would be extremely injudicious to advise the use of snuff to those of a phthi-

withstanding the *Royal Letters Patent*, cannot, without some additional stimulus, operate on *English* brains.—All this is characteristic in the vile and despicable plans adopted by quacks; but, to hear an ignorant pretender to medicine, descanting on the virtues residing in his acromatic belts; maintaining that an universal magnetic spirit pervades them; that this spirit alone cures all the diseases incident to the human frame, even broken limbs and exfoliations of bones; and, lastly, to permit an audacious impostor to impeach the honesty of the whole faculty, before a deluded audience—such outrage loudly calls for the interference of the civil magistrate.

fical complexion, or those afflicted with internal ulcers, and subject to blood-spitting; as, by the violent sneezing it at first occasions, such individuals might expose themselves to imminent danger.—Public speakers of every kind, as well as teachers of languages, in short, all those to whom a clear and distinct articulation is of consequence, ought to avoid this habit, which, when carried to excess, is, in this respect, extremely prejudicial. Those, too, who have a regard for cleanliness will not accustom themselves to this absurd practice. Upon the whole, the continual use of snuff gradually vitiates the organs of smell; weakens the faculty of sight, by withdrawing the humours from the eyes; impairs the sense of hearing; renders breathing difficult; depraves the palate; and, if taken too copiously, falls into the stomach, and, in a high degree, corrupts the organs of digestion.

Beside the many bad effects already mentioned, taking snuff may be attended with another consequence, equally dangerous to the alimentary canal. While the nose is continually obstructed, and a free respiration is impeded, the habitual snuff-taker generally breathes through the mouth only; he is thus obliged to keep his mouth always somewhat open, and consequently to inspire more frequently and with greater efforts. Thus, by swallowing too many draughts of air, he probably lays the foundation of that troublesome flatulency, which is common among those hypochondriacs who habitually
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take snuff. Hence, every person, unless good reasons can be assigned in favour of it, ought to be seriously dissuaded from the use of snuff, as well as of tobacco : and it further deserves to be remarked, that both these practices may be safely, and cannot be too suddenly relinquished, as soon as reason prevails over these artificial appetites of sense.

Of the Wax in the Ears.

If the ears be seldom, or not properly, cleaned, there sometimes accumulates a species of wax, which grows tough and hard, diminishes the acuteness of hearing, obstructs the passage to the ear, and may at length produce total deafness. Copious ear-wax, if it become thin and acrid, may occasion pain, and sometimes a running or suppuration in the ears. Daily washing with cold water strengthens these organs, and is an excellent preservative against accidents of this nature.—If it be apprehended, that insects have made their way into the cavity of the ear, it may be of service to introduce some sweet oil into the orifice, and to repose on that side, the ear of which is the seat of the complaint,

Of Hemorrhages.

These are fluxes of blood, useful to both sexes, when required and regulated by nature ; but, if

suppressed, they may be productive of serious and fatal consequences. The *menfes* keep no regular time in their appearance and disappearance, but are much influenced by the climate, and constitution of the body: the *hemorrhoids*, on the contrary, originate from the mode of living, joined to a particular temperament of the individual. *Bleeding of the nose* arises from either too copious blood, and its impetuous circulation, or from the bursting of one of the small arteries.—As long as these fluxes continue within proper limits, and do not exhaust the strength of the person subject to them, there is not the least necessity to employ any artificial means of suppressing them; as Nature must not be rudely checked in her beneficent efforts. Nay, even the passions and affections of the mind ought to be duly controlled, particularly by females of an irritable temper, during the recurrence of the *menfes*; for these may, according to circumstances, be either preternaturally increased, or totally suppressed, to the great injury of health. Lastly, it is extremely imprudent, for young women, to expose their feet and legs to dangerous colds, in washing the floors of rooms and passages upon their knees, at a time when they ought particularly to guard against the access of damp and cold. Humane and sensible persons would not allow their servants to follow this hurtful practice, by which they are liable to contract the most obstinate disorders: it produces obstructions
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in the abdomen, swelling of the legs, dropfical complaints, palsy, and even consumptions;—hence the numbers of female servants continually taking refuge in the different hospitals.

Of the retention of Milk.

Not less hurtful than the suppression of hemorrhages, is the retention of the milk in the female breast. This, likewise, is generally occasioned by indulging in fits of passion, or by exposing the body, and particularly the lower extremities, to the influence of damp and cold places, or wearing wet clothes, and linen not properly aired. Hence may arise nodules or small lumps in the breasts, troublesome swellings, especially if the milk be copious; inflammations accompanied with excruciating pain and violent fever; ulcers in one or more parts of the body at the same time, or scirrhous callosities; and, at length, if neglected or mismanaged, cancer itself. In many instances, a premature stoppage of the milk, in lying-in-women, has produced inflammation of the womb, and a severe child-bed fever. Lastly, an improper conduct with regard to food and drink, dress, air, &c. may occasion the suppression of the milk, as well as of every other evacuation.



C H A P. IX.

Of the SEXUAL INTERCOURSE; its physical consequences with respect to the Constitution;—under what circumstances it may be either conducive or hurtful to Health.

A SUBJECT of so extensive importance, both to our physical and moral welfare, as the consequences resulting from either a too limited or extravagant intercourse between the sexes, deserves the strictest inquiry, and the most serious attention of the reader.

The inclination to this intercourse, and the evacuation connected with it, are no less inherent in nature, than other bodily functions. Yet, as the semen is the most subtile and spiritous part of the human frame, and as it serves to the support of the nerves, this evacuation is by no means absolutely necessary; and it is besides attended with circumstances not common to any other. The emission of semen weakens the body more than the loss of twenty times the same quantity of blood, more than violent cathartics, emetics, &c.; hence, excesses of this nature produce a debilitating effect on the whole nervous system, on both body and mind.

It is founded on the observations of the ablest physiologists, that the greatest part of this refined
fluid

fluid is again absorbed, and mixed with the blood, of which it constitutes the most rarefied and volatile part; and that it imparts to the body peculiar sprightliness, vivacity, and vigour. These beneficial effects cannot be expected, if the semen be wantonly and improvidently squandered. Besides, the emission of it is accompanied with a particular species of tension and convulsion of the whole frame, which is always followed by relaxation. For the same reason, even libidinous thoughts, without any loss of semen, are debilitating, though in a less degree; on account of the blood being propelled to the parts of generation.

If this evacuation, however, be promoted only in a state of superfluity, and within proper bounds, it is not detrimental to health. Nature, indeed, spontaneously effects it, in the most healthy individuals, during sleep; and, as long as we observe no difference in bodily and mental energy after such losses, there is no danger to be apprehended from them. It is well established, and attested by the experience of eminent physicians, that in certain conditions, both of men and women, this is the only permanent remedy that can be advised, to restore their languishing health. It is not uncommon, that a complete state of melancholy, incurable by any other means, has been happily removed, in persons of both sexes, by exchanging a single state for that of wedlock.

There

There are a variety of circumstances, by which either the utility or infalubrity of the sexual intercourse is, in general, to be determined.—It is conducive to the wellbeing of the individual, if nature (not an extravagant or disordered imagination) induces us to satisfy this inclination—particularly under the following conditions :

1. In young persons, that is, adults, or those of a middle age ; as, from the flexibility of their vessels, the strength of their muscles, and the abundance of their vital spirits, they can with less danger sustain the loss occasioned by this indulgence.

2. In robust persons, who lose no more than is almost immediately replaced.

3. In sprightly individuals, and such as are particularly addicted to pleasure ; for, the stronger the natural desire, the less hurtful is its satisfaction.

4. In persons who are accustomed to it ;—for Nature pursues a different path, accordingly as she is habituated to the re-absorption, or to the evacuation of this fluid.

5. With a beloved object ; as the power pervading the nerves and muscular fibres is in proportion to the pleasure received.

6. After a sound sleep ; because then the body is more composed ; it is provided with a new stock of vital spirits, and the fluids are duly prepared :—hence, the early morning appears to be preferably designed by nature for the exercise of this function ;

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as the body is then most vigorous; and, being unemployed in any other pursuit, its natural propensity to this is the greater: besides, at this time, the advantage of a few hours sleep can be readily obtained, by which the expended powers are, in a great measure, restored.

7. With an empty stomach; for the office of digestion, so material to the restoration of bodily strength, is then not interrupted. Lastly,

8. In the vernal months; as nature at this season, in particular, incites all the lower animals to sexual intercourse; as we are then most vigorous and sprightly; and as the spring is not only the safest, but likewise the most proper time, with respect to the consequences resulting from that intercourse. It is well ascertained by experience, that children begotten in spring are of more solid fibres, and consequently more vigorous and robust, than those generated in the heat of summer, or cold of winter.

It may be collected from the following circumstances, whether or not the gratification of the sexual impulse has been conducive to the wellbeing of the body; namely, if it be not succeeded by particular lassitude, and if the body has not increased in heaviness, or the inaptitude to motion or thought, which, upon the whole, is a good symptom; as it indicates, that the various powers have sustained no essential loss, and that the superfluous matter only is evacuated.—Further, the
good.

good appearance of the urine, in this case, as well as cheerfulness and vivacity of mind, also prove a favourable coction of the fluids—all of which sufficiently evinces an unimpaired state of the animal functions, a due perspiration, and a free circulation of the blood.

There are, however, many cases in which this gratification is the more detrimental to health, that it has been immoderate, and without the impulse of nature, but particularly in the following situations:

1. In all debilitated persons; as they do not possess sufficient vital spirits; and as their strength, after this enervating emission, is consequently more slowly restored. In these, digestion necessarily suffers, perspiration is checked, and the body becomes sluggish and heavy.

2. In the aged; whose vital heat is diminished, whose frame is weakened by the most moderate enjoyment, and whose strength, already reduced, suffers a still greater diminution, from every loss, that is accompanied with a violent convulsion of the whole body.

3. In persons not arrived at the age of maturity:—by an early intercourse with the other sex, they become enervated and emaciated, and inevitably shorten their lives.

4. In dry, choleric, and thin persons: these, even at a mature age, should more rarely indulge in this passion, as their bodies are already in want of moisture and pliability, both of which are powerfully

erfully diminished by the sexual intercourse, while the bile is violently agitated, to the great injury of the whole animal frame.—Lean persons generally are of a hot temperament; and the more heat there is in the body, the greater will be the subsequent dryness. Hence, likewise, to persons in a state of intoxication, this intercourse is extremely pernicious; for the additional reason, that the then increased circulation of the blood towards the head, may be attended with dangerous consequences, such as bursting of blood-vessels, apoplexy, &c.;—the plethoric, particularly, are exposed to similar dangers.

5. Immediately after meals; as the powers requisite to the digestion of food, are thus drawn off, and the aliment remains too long unassimilated, and becomes burdensome to the stomach. ✓

6. After violent exercise; in which case it is still more hurtful than in the preceding, where muscular strength was not consumed, but only required to the aid of another function. After bodily fatigue, on the contrary, the necessary energy is in a manner exhausted, so that every additional exertion must be of double disadvantage to the body.

7. In the heat of summer it is less to be indulged in, than in spring and autumn; because the process of concoction and assimilation is carried on with less vigour in summer, than in the other seasons, and consequently the losses sustained are not so easily recovered. For a similar reason, the
sexual

sexual commerce is more weakening, and the capacity for it sooner extinguished, in hot than in temperate climates. The same remark is applicable to every warm temperature combined with moisture, which is extremely apt to debilitate the solid parts. Hence hatters, dyers, bakers, brewers, and all those exposed to steam, generally have relaxed and weakly fibres.

8. In a posture of body, which requires great muscular exertion, it is comparatively more weakening; as, in this case, various powers are expended at one time.

It is an unfavourable symptom, if the rest after sexual connection be heavy and uneasy; which plainly indicates, that more has been lost, than could be repaired by sleep: but if, at the same time, it be productive of relaxation, and affect the insensible perspiration, it is a still stronger proof, that it has been detrimental to the body.—There are, as has been before observed, two principal causes, from which the indulgence in this passion has a debilitating effect on the constitution, particularly in men:—1. by the convulsive motion of the whole frame, combined with the impassioned ecstasy of the mind; and, 2. by the loss of this essential fluid, more than by any other circumstance. But, if it be not emitted, the subsequent relaxation is inconsiderable, and not much increased even on the following day, if the semen should be ejected, upon a repetition of the intercourse.—It certainly

is ill-founded, that swellings of the scrotum may arise from a stagnation of the seminal fluid in these parts: such swellings, if they really take place, are not attended with any danger; as experience informs us, that they are either again absorbed, to the benefit of the body, or if the accumulation of semen become too copious, it is spontaneously evacuated by nature.

The relaxation of those who keep within the bounds of moderation, in this respect, does not continue long; one hour's sleep is generally sufficient to recover their energy. Such temperance is highly beneficial to the whole body, while it serves to animate all its powers, to promote insensible perspiration, as well as the circulation of the blood. The semen can be emitted without injuring the body, if nature alone demand it, that is, when the reservoirs are full, and a material stimulus is the cause of it, without the active concurrence of imagination.

As it is principally this fluid which affords vivacity, muscular strength and energy to the animal machine, the frequent loss of it cannot but weaken the nerves, the stomach, the intestines, the eyes, the heart, the brain, in short, the whole body, together with the powers of the mind;—it in a manner destroys the ardour for every thing great and beautiful, and surrenders the voluptuary, in the prime of his life, to all the terrors and infirmities of a premature age, from which even the conjugal

state cannot exempt him. The most certain consequence of excess in venery is hypochondria, frequently accompanied with incurable melancholy: the unhappy victim endeavours to exhilarate himself by a repetition of these convulsive exertions of his vital spirits, and thus precipitates himself into still greater misery.—Many of the diseases of the eyes originate in such intemperance; and these votaries of pleasure are not unfrequently attacked with *tabes dorsalis*, or consumption of the back, which generally proves fatal.

Here likewise, every individual ought to pay proper regard to his constitution. Some are provided by nature with an uncommon portion of bodily vigour, while others are but sparingly supplied: the former, therefore, overcome slight transgressions of this kind, without any danger, while the latter cannot commit excesses with impunity. The natural instinct ought always to be consulted, in whatever relates to this function; but it should not, as is frequently the case, be confounded with the artificial stimulus. Hypochondriacs, indeed, as well as those who make use of many nourishing articles of food and drink, are sometimes stimulated merely by a certain acrimony in the abdominal vessels; such a stimulus, however, is totally unconnected with the impulse of nature.

Frequent and copious emissions during sleep are productive of equally bad effects; they bring on the frailties of age at an early period of life, and
soon

soon prepare the exhausted sufferer for the grave. But infinitely more dangerous is the secret vice of onanism, which weakens the body more than any other species of debauchery. By this unnatural practice, a greater quantity of semen is evacuated, than by the natural commerce between the sexes; the vital spirits cannot operate so uniformly, as to counterbalance the convulsive effects which agitate the whole animal frame; and the circumstances, which render this hateful vice so destructive to both sexes, particularly at a tender age, are, that the opportunities of committing it are more frequent than those for the sexual intercourse, and that it but too readily becomes habitual. The imagination which, by the natural union of the sexes, is in a certain degree appeased and satisfied, becomes with every repetition of onanism more disordered, and is continually furnished with libidinous images: and although the frequent loss of semen is, for a considerable time, supplied by a fluid of an inferior quality, yet, even by this imperfect supply, the body is drained of the spiritous and most valuable parts of its fluids. All kinds of evacuation, when immoderate, are prejudicial to health; but that of the semen is particularly so; for it is an established fact, that every stimulus increases the secretion of humours, and that nature is thus forced to make irregular efforts, to restore the losses sustained, in the most speedy, though in its consequences, the most ruinous manner.

As most female animals refuse to receive the males, while they are in a state of pregnancy, the connection with pregnant women appears to be physically improper. Although the dangerous consequences thence arising, both to the mother and child, may have been exaggerated, yet the embrace of women far advanced in pregnancy is certainly not conformable to the laws of nature, and ought not to be considered as a matter of indifference. Such females as wantonly submit to it may readily miscarry; as the fetus is thus much compressed, and an additional flow of humours is thereby occasioned: for the same reason, common women rarely become pregnant. If, however, in married life, this intercourse, notwithstanding its impropriety, must be indulged in, it ought to be practised with precaution, and not too frequently; as such excesses not only may weaken the mother, but likewise are attended with effects very hurtful to the child. Nay, it is asserted by some authors, that the frequent cases of *hydrocephalus*, or dropsy in the head, are to be ascribed chiefly to this practice among parents;—a conclusion which, though hypothetical, is not altogether unreasonable.

A connection with females suckling children, is not less improper; as the milk is thereby corrupted, and the health of the infant affected.—Nor is it justifiable to gratify this passion during the menses; for, these may be thus either suddenly suppressed, or, by the increased access of the fluids, may

may terminate in an hemorrhage of the womb : besides which, the sexual intercourse during this period, as well as for some days immediately preceding, cannot answer the purpose of generation ; because the ovum of the female, being but weakly attached, is again separated by the periodical discharge. Hence the congress of the sexes is most generally crowned with fertility, after the cateménia have ceased ; for then the female is in the most proper state for fecundation, so that the ovum has sufficient time to be consolidated, before the next menstrual evacuation.

Not with a view to satisfy idle curiosity, but for the information of the judicious reader, I shall insert here some particulars, relative to the nature of the feminal fluid. The semen in men, as it is emitted in the act of coition, consists of various compound humours. Beside the real semen prepared in the scrotum, and deposited in the proper vesicles, it is mixed with the peculiar moisture contained in the latter, with the liquor secreted by the prostrate gland, and probably also with some mucus or phlegm from the urethra. It is of a greyish colour, rather inclining to white, is glutinous and tough, has a very volatile, penetrating smell, and is of considerable specific gravity. In water, the thicker part, which in all probability is the pure semen, sinks to the bottom ; another part draws in fine threads, and forms a delicate pellicle on the surface of the water. In persons not arrived

at the age of maturity, and likewise in enervated adults, it is of a thin and watery consistence. In the fresh semen of those who are capable of procreating, we find a great number of animalculæ, which can be observed only by means of the most powerful microscopes: they do not appear to be mere vesicles filled with air; as they are formed of different parts, one extremity being somewhat spherical, the other smaller and rather pointed:—their supposed use will be mentioned towards the conclusion of this chapter, when treating on the different theories of generation.

As part of the small artery, through which the blood is propelled into both testicles, runs immediately under the skin, and consequently it is conducted from a warmer to a much colder place; as the seminal tubes in the testicles are very delicate and long, and take throughout a serpentine course; the canal traversing the upper testicle (*epididymis*) being alone thirty feet long and upwards; as, lastly, the narrow seminal tubes pass over into the wider canal of the epididymis, and this again into the still wider seminal passage: it is obvious, that the secretion and evacuation of the semen not only takes place very slowly, but also in very small quantity. Nature seems to employ a considerable time in preparing and perfectionating a fluid, which is indispensably necessary to the propagation of the species. The quantity, therefore, which is expended in every intercourse between the sexes, and which is
computed

computed to be equal to half an ounce weight*, can be but gradually replaced. Hence it happens, that even men of strong constitutions cannot indulge in the pleasures of the bed, more than once in three or four days, for any length of time, without in some degree impairing their health, and diminishing their strength. These remarks, however, apply chiefly, and almost exclusively, to the male sex; for, with regard to women, it is an erroneous notion, that they secrete any semen; what has formerly been considered as such, consists merely of a pituitous liquor, proceeding from the womb as well as the vagina.

To return from this short digression, I shall further observe, that where it may be otherwise lawful, it is an excellent and healthful rule, (however ludicrous it may appear to the sensualist,) to gratify the inclination to the sexual commerce only at regular stated periods, so that nature may become habituated to it, without making unusual and hurtful efforts. This might be attended with the additional advantage, that persons, in a conjugal state, would not be so apt to commit excesses, which, in the end, are always productive of satiety and indifference towards the object of former affection, and

* This assertion, as well as that immediately following, rest upon the authority of Prof. LODER, of Jena; and I here refer to his excellent work: "*Elements of Medical Anthropology, &c.*" (in German), p. 411. second edition, 8vo. Weimar, 1793.

which are undoubtedly the frequent cause of a feeble and degenerated offspring. No irregularities whatever are more certainly punished than those of venery; and, though the consequences should not immediately take place, they unavoidably follow, and generally at a time when they are most severely felt; sometimes in the organs of generation alone, and sometimes over the whole body. Even the connection with the most beloved person, the possession of whom has been long and anxiously wished for, does not exempt the voluptuary from these hurtful effects, if the bounds of moderation be exceeded: the imagination at length becomes much disordered; the head is filled with no other but libidinous images; the idea of sensual enjoyment excludes the reflections of reason. Thus Nature becomes in a manner forced to conduct the fluids to the parts of generation, so that such unfortunate persons cannot relinquish this destructive habit; they are troubled with involuntary emissions of the semen, which are extremely debilitating, and which either deprive them entirely of the faculty of procreating, or destroy the elasticity of the parts, and corrupt the semen to such a degree, as to produce only feeble and enervated children.

In those who lead a life of debauchery, spasmodic affections, and even ruptures, are not uncommon: women are afflicted with the *fluor albus*, violent fluxes of the menses, falling down of the vagina, and innumerable other maladies of a disagreeable

agreeable nature. These destructive effects on the body are at first manifested by a general relaxation of the solids: the whole nervous system is reduced to a state of extreme debility, which is rarely, if ever, removed by the most rigorous adherence to diet, and the most apposite medical remedies. Hence necessarily arise, as has been already observed, the almost infinite varieties of hypochondria, and mental imbecility, to so alarming a degree, that persons of this description cannot direct their ideas to one object, for a quarter of an hour together. Their spirits are exhausted; their memory as well as their judgment are greatly impaired; in short, all the faculties of mind, all its serenity and tranquility, are so much affected, that they scarcely enjoy one happy moment.—The external senses do not suffer less upon these occasions: the eyes, in particular, become sensibly weaker, images or figures are continually floating before them, and frequently the power of vision is entirely destroyed.—The stomach also in a great measure partakes of these troubles, on account of its intimate connection with the nerves: from this quarter arise diseases of various degrees of malignity;—the lungs too become disordered; hence the many lingering and incurable consumptions, which destroy numbers in the prime of life. If, however, they escape from this general catastrophe, their bodies become bent from absolute weakness, their gait sluggish and tottering, and the whole remainder of their days is

marked with painful debility.—Young persons, as well as those whose employments require much muscular exertion, are in an uncommon degree weakened by frequent debauches. Upon the whole, the sexual intercourse, even within the limits of moderation, is more hurtful to some individuals than to others. Thus, a person born of strong and healthy parents is not nearly so much hurt by occasional extravagance, as another, whose parents were weak and enervated, or who is himself threatened with consumption; and, lastly, those also ought to be abstemious in this respect, who feel an uncommon lassitude and weakness, after the least indulgence.

There are people, who from ignorance have long been in the habit of committing excesses, and who wish at once to reform their mode of life; the consequence of this sudden change generally is an increased debility; they are very liable to fits of the gout, hysteric and hypochondriacal complaints. As they are sensible of their growing weakness, they expect to relieve themselves by strengthening remedies; but these render their situation still worse, as they are apt to occasion involuntary emissions of semen in the night, to relax and destroy the stomach, and at length to produce an irritating acrimony in the intestines, which is the frequent cause of such emissions. Even the mild corroborants cannot be used here with any hopes of success; as the body is overloaded with pituitous phlegm, from
which

which readily arise jaundice and dropsy. Hence it is more advisable, and, at least in a physical respect, more salutary, to return from such irregularities by gradual steps, than by a too sudden and dangerous change.

It is further worthy of remark, that most persons, particularly in the higher ranks, do not marry at a proper period of life; partly from caprice and family-considerations; partly on account of the difficulty to maintain a family, in the present more expensive mode of living; and partly from other causes which are best known to bachelors. Thus they enter into the conjugal state, when their frame is reduced by dissipation of every kind; such debauchees ought not to be permitted by the State to encumber the world with a degenerated offspring. On the contrary, to be married too early, and before a person has attained to the age of maturity, is likewise improper and hurtful. Every candidate for matrimony should endeavour to obtain the most accurate intelligence, whether the object of his affection be qualified for the various duties of that state, or whether she be subject to phthisical, hysterical, and nervous complaints, all of which ought to be guarded against; as, besides the misery of being united to a partner not in a state of salubrity, healthy women only will produce sound and vigorous children. Those who do not marry for the sake of wealth and family-interest, should choose a well-formed and agreeable partner, as ill-favoured mothers

mothers seldom bring forth handsome children. The natural disposition of a woman likewise, in this respect, deserves to be investigated, previous to the union; for it is said by accurate observers, that children most generally inherit the propensities and passions of the mother. There ought further to subsist no remarkable difference between the age of the married couple: the most proper time of life for marriage, in our climate in general, appears to be that between the age of eighteen and twenty in the female, and from twenty-two to twenty-four in the male sex.—Lastly, women who are hump-backed, or who have had the rickets in their infancy, ought not to enter the state of wedlock; the former, in particular, (according to the rules of sound state-policy,) should by no means be allowed to marry, until examined by professional persons, whether there be any impediment to child-bearing from the preternatural structure of the *pelvis*:—this frequently renders the Cæsarean operation necessary; or the artificial separation of the pelvis is connected with imminent danger of life. For the same reason, even elderly women should not be encouraged to engage in matrimony, as they either remain barren, or, if not, they experience very difficult and painful parturition.

In some rare instances, however, too great abstinence may be the cause of serious distempers. A total retention of the semen is not indeed always hurtful; but it may be so, occasionally, to persons
naturally

naturally lascivious, and to those of a corpulent habit. These are generally provided with an abundance of the feminal fluid, which, if too long retained in the body, causes involuntary evacuations, plethora, swellings, pain and inflammation of the feminal vessels, the inspissation and at length corruption of the stagnating semen—and sometimes, though more rarely, priapisms, convulsions, melancholy, and at length furious lewdness. The female sex are not less liable to diseases from inevitable abstinence: loss of strength, *chlorosis*, *fluor albus*, hysterics, and even *furor uterinus*, may sometimes be the consequence. Yet, I cannot upon this occasion omit to remark, that these effects seldom, if ever, take place in those who live regularly, and do not encourage libidinous ideas; and that both males and females would undoubtedly derive greater benefit from total continence, till marriage, than by an unlimited indulgence in venery: in the former case, they would not only in a great measure contribute to their vigour of body and mind, but also to the prolongation of their life.—Young women of an habitually pale colour, may be justly suspected of being troubled with the *fluor albus*;—that they have an ardent desire of changing their state; or, what is still worse, that they have been guilty of a solitary vice, equally disgraceful and destructive.

To repair the injuries brought on by an excessive indulgence in the sexual commerce, such
means

means ought to be employed, as are calculated to remove the irregularities which have taken place in the functions of digestion and perspiration, and to give new energy to the solid parts. With this intention, the quantity of food is not of so much consequence as its quality; hence the articles of diet should be of a nourishing nature, of easy digestion, and have a tendency to promote insensible perspiration: in all states of debility, a light and spare diet is the most suitable to restore strength, without exerting too much the digestive organs. Hence rich nourishment, as well as tough, flatulent, and crude articles, or those which are liable to ferment in the stomach, would, in such cases, be extremely pernicious.—But, above all, a greater degree of abstinence from the intercourse which has occasioned the weakness, cannot be too seriously recommended; as this alone is generally sufficient to restore muscular vigour, especially where age and soundness of constitution are in favour of the individual.

Although we are possessed of no specifics, strictly deserving the appellation of *aphrodisiacs*, yet there certainly are means, which tend to promote the desire, as well as the capacity, of carrying on the sexual intercourse: these are either such as contribute to increase the seminal fluids, or stimulate the genital organs. Of the former kind are those, which afford a rich chyle and salubrious blood, which conduct this fluid more than usual to the parts of generation,

generation, and are on that account mildly diuretic; for instance, milk, eggs, tender and nourishing meat, herbs and roots of a mild spicy nature, and such as promote the secretion of urine, moderate bodily exercise, particularly on horse-back, &c. Merely stimulating remedies, however, should not be employed without great precaution, especially by the weakly, and those beyond a certain age; for the emission of semen, in these, is generally attended with debility and disgust: while in young and robust persons there is no necessity to increase the quantity of that fluid by artificial means.

There are likewise remedies of an opposite tendency, more effectually answering the purpose of moderating, or rather checking a too violent propensity to venery, than those before stated, with a view to promote it. In the present state of society, and particularly among maritime nations, where a great proportion of men and women are obliged to lead a single life, the means conducive to diminish this passion, are not less important, and deserve every attention. Of this nature are:

1. A laborious and rigid life, much bodily exercise, little sleep, and a spare diet; so that the fluids may be more conducted to other parts, and that they may not be produced in greater quantity, than is required to the support of the body. For the same reason, it is advisable, as soon as the desire of committing excesses rises to any height, immediately to resort to some serious avocation, to make use

use of less nutritious substances of food and drink, to avoid all dishes peculiarly stimulating the palate, and to abstain from the use of wine, and other spiritous liquors.

2. To shun every species of excitement; such as intimacy with the other sex, amorous conversations, libidinous narratives, seductive books, pictures, &c.

3. A cool regimen in every respect:—hence Plato and Aristotle recommended the custom of going barefooted, as a means of checking the stimulus to carnal desire; so that this indecorous practice was considered by the ancients as a symbol of chastity. The cold bath was likewise suggested for this purpose; others again, among whom may be reckoned Pliny and Galen, advised to wear thin sheets of lead on the calves of the legs, and in the region of the kidneys.—With the same intention, and probably with better effect, may be used the cooling articles of nourishment, such as lettuce, water-purslane, cucumbers, &c.—for common drink, mere water; and, if the impulse of passion should increase, a small quantity of nitre, vinegar, or vitriolic acid, may be added to the water, so as to render it a more cooling drink.—Yet all these and similar remedies are of little or no advantage to the habitual voluptuary, especially if subject to hypochondria. The exciting cause in such persons not unfrequently proceeds from a diseased abdomen, which, as has been before observed, may be so much

much obstructed, that all other remedies are in vain, until the material stimulus of such obstructions be removed.—Lastly,

4. The various *extenuants*, such as spices of all kinds, particularly the smoking of tobacco, violent exercise, &c. are equally unsafe; as these would inevitably impair the health of persons naturally lean, sanguine, and choleric; while in cold and phlegmatic temperaments, they would rather tend to increase than to abate the stimulus.

Having now, as far as was consistent with the plan of this work, investigated both the beneficial and detrimental consequences of the sexual intercourse, I propose to conclude this subject with a concise view of the principal *theories of generation*, which have been offered by the ablest physiologists, and which I have extracted from the before-mentioned work of Mr. Loder.

“ The origin of the first germ of the embryo,” (says the learned Professor,) “ and the manner of its formation, is so obscure, that of all the conjectures made by the most attentive and ingenious observers, none has yet obtained general credit, or arrived at any degree of certainty. The sexual function appears to belong to those secrets of nature, to the developement of which the powers of the human understanding are altogether inadequate. Yet, it is not undeserving the attention of a reflecting mind, to become acquainted with the diversified hypotheses that have prevailed on this subject,

and particularly those which have the greatest share of probability in their favour.

“ Some of the ancient naturalists have searched for the first germ of the embryo, not within the bodies of the parents, but absolutely in external objects ; while they maintained, that it is introduced from without, either by the air, or particular articles of nourishment ; and, if it happen to meet with a body qualified to accomplish its formation, it then receives life and grows ; but, in the contrary case, it passes away unchanged. This whimsical conjecture is undeservedly transmitted to our times, by the name of *panspermia* ;—it does not deserve to be refuted, as it is founded on no observations, and is totally inconsistent with experience.

“ By another hypothesis (*generatio æquivoca*), it was asserted, that a variety of insects, and even of the smaller animals, may originate from extraneous substances, by mere fermentation and putrefaction, without previous generation, or any intercourse of males and females.—Thus maggots were said to arise from putrifying meat, and in wounds ; fleas to grow in urine and feces, &c. But more accurate observations have instructed us, that such vermin are then only generated in putrescible bodies, when the eggs of those insects, which feed upon putrid substances, have been there previously deposited.—Yet there is a certain kind of minute animals, which seem to receive life merely from the vivifying powers of nature, being bred in sub-

stances foreign to their species; and to these perhaps the preceding theory is so far applicable, as their origin is involved in obscurity.

“ Other naturalists have ascribed the first germ of the embryo exclusively to the semen of the male. Hence arose the singular opinion, that the small embryo, with all its parts, is already deposited visibly in the semen; or, that it may be produced from this humour by mere fermentation, or chemical process, without the co-operation of the animal body. Hence also the hypothesis formerly maintained by several eminent writers, that the animalculæ of the semen are to be considered as germs of embryos; that, with every intercourse between the sexes, an innumerable quantity of these is introduced into the female parts of generation; that only one or two of such animalculæ arrives at the ovaria, from these returns to the womb, and progressively grows there; but that all others necessarily perish *. This bold conjecture is not only

* *Ludwig von Hammon*, a young man, born at Dantzic, during the time of his studying medicine at Leyden, and in the course of his microscopical pursuits, discovered, in the month of August 1677, in a drop of the semen of a cock recently dissected, a kind of ocean, in which swam thousands of little lively active animals.—The same phenomenon was also observed in the mature semen of other male animals; and in these animalculæ were immediately thought to be seen the germs of subsequent perfect animals. By this discovery, a key was supposed to be found, which would unlock the whole mystery of generation.

incompatible with the wisdom of the Creator, but, besides other strong arguments against it, in a manner refutes itself by this circumstance, that in very different creatures, for instance, in men and in asses, there are found animalculæ completely similar, while in animals of the greatest resemblance in other respects, we meet with animalculæ altogether different. For this reason, they must be looked upon as little creatures inherent in the animal body, and which indeed may form an essential part of a fruitful semen, but the use of which is yet unknown.

“ Another sect of natural philosophers attributed to both sexes an equal share in the procreating function, while they maintained, that the germ of the embryo originates in a mixture of the male and female semen, the latter of which proceeds from the ovaria. Among later naturalists, the celebrated BUFFON was the principal supporter of this opinion. He endeavoured to establish this hypothetical notion, by conjoining with it the idea of certain *internal forms*, which were requisite to the formation of the parts of the body ; in consequence of which he maintained, that the sex of the embryo is determined by the circumstance of its consisting of a greater quantity of male or female semen.—But, as the supposed female semen does not proceed from the ovaria, and, as the ovaria are not connected with the womb by any tubes, but merely by solid ligaments, it follows that women secrete no semen,

semen, and, what is improperly so called, is only, as I have already observed, a pituitous liquor secreted from the uterus and the vagina. It is further inconceivable, that the embryo could be endowed with corporeal parts, different from those of father and mother, if it originated merely in the mixture of the seminal fluids of both, and if these should comprehend all the individual parts of the body. Besides, the fanciful internal forms of Buffon cannot be proved by any argument or observation.

“ Still others have ascribed the germ of the embryo to the mother alone, while they granted to the male semen no other power than that of vivification. These philosophers, among whom we find HALLER and BONNET, seriously asserted, that the whole body of the embryo lies already prepared in the ovary of the mother, so that it requires only to be developed afterwards, and that the male semen communicates merely the first impulse to this developement. They certainly went too far in this assertion; yet it is highly probable, that the crude matter already exists in the ovary, and that it is first animated by the semen of the male, and thus qualified for its gradual formation.

“ Respecting the manner in which the embryo is formed, there prevail two principal theories, namely, that of *evolution**, and that of *gradual formation*

* “ According to this theory,” (says the facetious *Prof. BLUMENBACH of Göttingen*,) “ we, and indeed all the children

formation (*epigenesis*). Agreeably to the former, it was conjectured, that all organic bodies, which have

of Adam, were at one time, *ipso facto*, pent up in the two ovaria of our common mother Eve. There we lay, as it were asleep; and, though astonishingly little creatures, yet completely organized bodies, and perfect miniatures of the forms we have since assumed; for, says Haller, “*All our viscera, and the bones themselves were then already formed, although in a kind of fluid state.*” That which we call impregnation, is nothing else than the action of awakening the germ from its lethargic state, by means of the male semen, which stimulates the little creature’s heart to the first pulsation; and so on.

“The same kind of idea has lately induced a very celebrated naturalist of Geneva, and a warm advocate of this theory, to plan out for us a history of organized bodies previous to the state of impregnation, from which we learn, 1. that we are all much older than we suppose ourselves to be; 2. that all mankind are exactly of the same age, the great-grandfather not a second older than the youngest of his great-grandchildren; 3. that this respectable age, which we are all of, may be about six thousand years. The same natural historian also agrees entirely in opinion with Bazin; that since this charming long series of years, when we were all packed together, along with Cain and Abel, and the other two hundred thousand millions of men, which, according to the best calculations, have since that period gone—*quo pius Æneas, quo Tullus dives, et Ancus*; in a word, since the first creation, during which time we have been in a kind of lethargic sleep, though not entirely without motion; that during the whole fifty-seven centuries, I say, previous to our being awakened by the above-mentioned stimulus, we were, according to Bazin’s opinion, always growing by imperceptible degrees; for instance, we were most probably rather a little bigger at the time we lay beside Cain’s nieces, than

have already originated, or which may at any future time originate from one another, have been combined, or in a manner encased one within another as germs, from the first creation of the world;

than when all their uncles and aunts were of the party, as it is very natural to suppose, that we must then have been considerably more pinched for room. In this manner, our apartment became gradually more easy and commodious, in proportion as our forefathers were evolved; and we agreed with it, for we kept continually stretching ourselves more and more, until the succession of evolution at last came to our turn!!”

Such is the ludicrous account of a theory which, though leading to the most extravagant and romantic conclusions, was supported by the great Baron HALLER, and by the still living SPALLANZANI, one of the Directors of the Ligurian Republic. These eminent men have endeavoured to support the doctrine of the pre-existence of complete organized *molecule* in the ovaria of females before impregnation, by many experiments and observations, which, at first sight, appeared to be so far conclusive, that they obtained full and general credit for more than thirty years. Prof. Blumenbach himself, not only believed in the truth of this absurd doctrine, but defended it in many of his earlier writings. At length, however, the success he unexpectedly met with, in an experiment instituted with a species of a green armed polypus (*conferva fontinalis*), and its astonishingly rapid powers of reproduction, induced this candid philosopher to acknowledge his former errors, and to publish an ‘*Essay on Generation*,’ in which he boldly attacks all former theories; attempts to refute them, partly by argument, partly by his peculiarly humorous mode of exposing the inconsistencies they lead to; and, at the same time, proposes a new hypothesis, the substance of which I shall insert in a subsequent page, when the theory of *gradual formation* will be considered.

and that they required only a gradual evolution, to bring them to a state of perfection. The supporters of this theory alleged the instance of the vine-fretter, which evidently contains in itself several generations, as likewise that of the butter-fly, which lies already formed in its case, and various other plausible examples; but, above all, they endeavoured to explain their hypothesis by the origin of the chicken in the egg*; which, however, is a direct

* To such readers as are desirous to become more fully acquainted with the particulars of this extraordinary conjecture, it may be useful to illustrate it with the following account, extracted from the Essay before quoted, from the pen of Prof. Blumenbach.

“ Mr. PAUL,” says he, “ a natural historian of great reputation, has (in his preface to the 8th vol. of the *Collection Academique*, p. 22, & seqq.) objected to Haller’s demonstration, that allowing the membranes of the yolk with its invisible vessels to have pre-existed in the hen, yet it is possible that the embryo is only formed during incubation, and that its blood-vessels afterwards unite with the blood-vessels of the membranes of the yolk, and thus form an *anastomosis*.

“ Baron von Haller immediately declared loudly against this objection, and denied it as a thing altogether *impossible*, that the tender vessels of the microscopic embryo should be capable of anastomosing with the large blood-vessels of the giant yolk.

“ But what is rather singular, is, that this same most ingenious and meritorious author, who denies the possibility of such an anastomosis, supposes without any hesitation, and in the same work, when explaining human conception, that the very minute germ, as soon as it has arrived at the cavity of the uterus, forms an adhesion with it, by means of the placenta;—And how?—Just in the same way that he denies it

direct demonstration of the contrary. The objections which have been started against this opinion, concerning

it to the embryo of the hen ; that is to say, by an anastomosis taking place between the microscopic and tender branches of the umbilical vessels, and the giant ones of the maternal uterus.

“ The modern advocates for the theory of evolution have taken this observation of the yolk of the egg, as the prop of their hypothesis.—Long before this, however, the spawn of the frog had been employed for the same service.

“ Near a century indeed before that period, SWAMMERDAM announced the wonderful discovery, that the black points in the spawn of a frog were so many perfectly-formed little frogs, and that they pre-existed in the ovaria, although not to be discovered by the naked eye.

“ The good man seemed to have had a *presentiment* of the uncertainty and instability of all vain worldly honours ; and he therefore, as is well known, soon after betook himself to a more solid mysterious enjoyment, in which Mademoiselle Bourignon bore a part. And, indeed, it happened as he appears to have foreseen ; for the ungrateful world now ascribe the merits of that discovery to the celebrated ABBÉ SPALLANZANI, who has maintained it in several of his writings, but more particularly in the second volume of his “ *Differenzioni di fisica animale e vegetabile.*” Tom. xi. in Modena, 1780, 8vo.

“ He calls the little black points of the fecundated spawn of frogs, tadpoles, or young frogs ; and, as this little black point exactly resembles the same in the unfecundated spawn, he reasons, agreeably to his logic, that the tadpoles must have existed in the mother.—I do not know what would be thought of a chemist who should assert that the *Arbor Dianae* pre-existed in a mass of amalgam of silver, because, when a weak solution of silver was poured on it, a little tree seemed to spring out of it.—One ought to be ashamed of wasting much

concerning the minuteness of the germs, and the production of monsters or bodies of preternatural shape,

much time in the refutation of an assertion, the falsity of which any unprejudiced person, who is not altogether unaccustomed to observations of the kind, may convince himself of, every spring.

“Whoever has taken the trouble accurately to examine the spawn of the frog, must confess, that the idea of demonstrating the little black points contained in it, to be so many complete formed tadpoles, partakes greatly of Brother Peter’s method of reasoning in the *Tale of a Tub*,—where he demonstrates to his brothers, that a brown loaf is a piece of excellent roast-mutton —But the abettors of the theory of organized germs have gone a step further in support of their opinions. They refer to cases where even young girls, in all their maiden innocence, have become pregnant, from the untimely and premature evolution of one of these organized germs.

“The concurrence of facts is sometimes most wonderful. It happened, that in the very same year in which Swammerdam announced his discovery in the spawn of the frog, a case was published in the *Ephem. rerum nat. curios.* delivered to the society by a celebrated court-physician of those times, Dr. CLAUDIUS, which exactly suited, as a confirmation of Swammerdam’s opinion.—A miller’s wife was delivered of a little girl whose belly seemed of an unusual size. Eight days afterwards this big-bellied child was seized with such violent pains and restlessness, that every one who was present thought, that it could not outlive the next instant. The sick infant, however, in the mean time, actually bore a well-formed, elegant, lively little daughter about the size of one’s middle finger, which was regularly baptized. During the time, and after the birth, the waters, placenta, and all other impurities were duly discharged; but both the little mother and daughter died early the following day!!!”—
(Prof.

shape, may be easily removed; but, a more weighty objection made against this theory, is that which relates to the restoration of parts lost from the body, and which appears to be irrefutable. Besides these considerations, many arguments may be produced to shew the futility of this doctrine.

“ More probable than the former, unquestionably is the theory of *gradual formation* *. According

(Prof. Blumenbach says, in a note subjoined to this account, that he has made use of the very words of a contemporary physician, Dr. OTTO, who was consulted by the grandmother (the miller's wife) during her pregnancy. His nephew has vindicated and illustrated the whole history in a most learned and ingenious manner: ‘ *D. C. J. Aug. Ottonis Epistola de fatu puerpera, sive de fatu in fatu.*’ Weissenfels, 1740, 8vo.)

“ Baron von Haller very judiciously classes this case with another from the Transactions of the Academy of Sciences at Stockholm, where, on dissecting a young girl, bones, teeth, and hairs were found in a tumor of the mesentery. These two cases he looks upon as principal evidences for the truth of the doctrine of germs pre-existing in the mother.”

* Another definition of *Epigenesis* deserves to be inserted here, as it is more concise, and as its author, Prof. Blumenbach, has not only embraced this doctrine as the most rational on a subject of so mysterious a nature, but has likewise been at great pains to elucidate the gradual formation of animate bodies by an additional hypothesis—his *nifus formativus* (*Bildungs-trieb*), or the spontaneous effort of nature in forming homogeneous substances.—“ It is supposed,” says he, “ that the prepared, but at the same time unorganized rudiments of the fœtus, first begin to be gradually organized,

when

ing to this it is supposed, that previous to generation there exists no real germ, but crude matter only, from which the parts of the organic body are gradually formed. The power by which this formation is accomplished, is a certain formative effort pervading all nature, (NISUS FORMATIVUS; *vis plastica, vis essentialis*,) manifesting its activity according to equal and determinate laws, although in a different manner, in the functions of nutrition and generation, as well as in the restoration of parts accidentally lost. Upon the whole, it may be safely asserted, that this is a mere modification of

when it arrives at its place of destination, at a due time, and under the necessary circumstances. This is the doctrine of Epigenesis." And with a view to corroborate this supposition, the learned Professor makes the following categorical declaration: "*That there is no such thing in nature, as pre-existing organized germs: but that the unorganized matter of generation, after being duly prepared, and having arrived at its place of destination, takes on a particular action, or nîsus, which nîsus continues to act through the whole life of the animal, and that by it the first form of the animal, or plant, is not only determined, but afterwards preserved, and when deranged, is again restored. A nîsus, which seems therefore to depend on the powers of life, but which is as distinct from the other qualities of living bodies, (sensitivity, irritability, and contractility,) as from the common properties of dead matter: that it is the chief principle of generation, growth, nutrition, and reproduction; and that, to distinguish it from all others, it may be denominated the FORMATIVE NISUS.*"

I shall only add, that this is, at present, the prevailing theory in the German Universities; though, in reality, it leaves us as much in the dark as every other.

the

the universal power of vitality. If no obstacle be opposed to this plastic effort, the young organic body then receives its usual and proper form; but, in the contrary case, there arise various unnatural shapes and monsters. By the influence of climate, aliment, mode of living, and other incidental circumstances, this effort of nature may, in the course of life, be variously modified; nay, it is liable to changes in the very first crude matter, or in the plastic lymph, by the different constitution of the male semen.—But the principal arguments in favour of the theory of gradual formation, are justly derived from the first origin of plants, from the formation of the chick in the egg, and from the reproduction of such parts of the body, as have been lost, either by accident or necessity.”



C H A P. X.

*Of the PASSIONS and AFFECTIONS of the MIND;—
their relative good and bad effects on Health.*

THE tempestuous ocean does not exhibit scenes more diversified, than the various affections of the human mind. They arise partly from the mind itself, and partly from the various states and constitutions of the body. As no remedies, except rational arguments, and the counterpoise of opposite passions, are availing with the former; the latter can only be removed by improving the bodily disposition. It is principally from this source, that many persons are violently affected from the most insignificant causes, and others are little, if at all, influenced by the most calamitous events. It is, for instance, obviously from a physical cause, that violent medicines, poisons, the bite of mad animals, produce timidity, fits of anger and rage; or, that accumulations of black bile in the abdomen make people reserved, peevish, melancholy, and stupid. What we wish to think, and in what manner to pursue the operations of the mind, frequently does not depend upon ourselves. The thoughts of the sober are very different from those of the man in a state of intoxication. A certain
dish,

dish, a particular drink, may extinguish the powers of reason.

The temperament of man is, as it were, the source of his mental actions. Affections and passions are different one from another in degree only. The former imply the inclination or propensity to a passion; the latter, the realized affections, whether simple or compounded; or in other words, they constitute an actual and perceptible degree of sensual desire or aversion. According to Lord KAIMES, passions are active and accompanied with desires; affections are inactive and destitute of passion. He also distinguishes between wishes and desires: the former he calls the highest activity of the affections. Compassion and wishes for the better, are in his idea *affections*: pity, and a desire after what is better, he calls *passions*.

Passions operate upon the body either suddenly, or slowly and by degrees. Sudden death, or imminent danger of life, may be the consequence of the former: a gradual decline and consumption, that of the latter. The passions, as such, may be aptly divided into two principal classes, those of an agreeable and of a disagreeable nature. Men of strong imagination chiefly suffer from passions of the violent kind, while those of more understanding and less fancy are subject to slow emotions of the mind. Indolent persons, and those whose sensations are not quick, are, upon the whole, less passionate, than those who combine acute feelings, and a lively imagination,

imagination, with a clear understanding. The greatest minds are generally the most impassioned.

All passions, of whatever kind, if they rise to a high and violent degree, are of a dangerous tendency; bodily disease, nay death itself, may be their concomitant effects. Fatal apoplexies have frequently followed sudden dread or terror. Cataplexy and epileptic fits not rarely accompany immoderate affliction, or distressing anxiety. Hypochondria, hysterics, and habitual dejection, may indeed arise from a variety of physical causes; but they are as frequently generated by the passions or sufferings of the mind alone, in individuals otherwise healthy. Diseases of the mind, after some time, produce various disorders of the body; as diseases of the body occasionally terminate in mental disorders. In either case, the malady must be opposed by physical, as well as moral remedies.

It is only by the constitution and education of the body, that the passions may be rendered useful; for, if uncontrolled and left to themselves, they affect us as a tempest does the ocean, without our being able to counteract their pernicious influence. Since all affections whatever consist in desire or aversion, they must necessarily be accompanied with representations of so lively a nature, as to induce the body to perform motions conformable to them. Consequently the affections must also be accompanied by *sensible* motions within the body, not only by voluntary actions, but by those also,
which

which contribute to the support of life, and which are more or less violent, according to the degree of the affection. Joy, for instance, enlivens all bodily actions, and, as it were, pervades the whole animal frame. Hope has nearly a similar effect; and these two affections contribute to the preservation of health and life, more than all the medicines that can be contrived. But of the other affections of the mind, we can, in most instances, observe scarcely any other effect, than that of irregular motions, which, not unlike medicines, in a limited degree, and under certain circumstances, may be occasionally useful. *Hence the dominion over our passions and affections is an essential and indispensable requisite to health.* Every individual, indeed, is at his birth provided with a certain basis of inclinations, and with his peculiar moral temperament: the most tender infant, even before he is capable of speaking, discovers by his features and gestures the principal inclinations of his mind. If these be fostered in his susceptible breast, they will grow up with him, and take so deep a root, that the adult cannot, without the greatest exertion, overcome them by the power of reason.

The physical state of the body is most happy, when the mind enjoys a moderate degree of gaiety, such as is generally met with in healthy and virtuous people. The circulation of the fluids and perspiration are carried on with proper vigour; stagnations are thereby prevented or removed; by

this lively and uniform motion, not only digestion, but also all the other functions of the body, are duly performed.

Joy is that state of the mind, in which it feels extraordinary pleasure ; in which it enjoys a high degree of contentment and happiness. The activity of the whole machine is enlivened by it ; the eyes sparkle ; the action of the heart and arteries is increased ; the circulation of all the fluids is more vigorous and uniform ; it facilitates the cure of diseases in general, and forwards the period of convalescence. The different degrees of this affection are, *Gaiety*, *Cheerfulness*, *Mirth*, *Exultation*, *Raptures*, and *Ecstasies*.—Habitual joy and serenity, arising from the perfection, rectitude, and due subordination of our faculties, and their lively exercise on objects agreeable to them, constitute mental or rational happiness.

Evacuations which are moderate and afford relief, a proper state of perspiration, and all food of an aperient quality and easy digestion, may be considered as contributing to a joyful tone of mind. A pure, dry air, and every thing invigorating the functions of the body, on the well-being of which the serenity of mind greatly depends, has a tendency to obviate stagnations. Joy further is more salutary, when combined with other moderate affections, than it is by itself ; the various bodily exertions, as well as the employments of the mind, in reflecting upon different objects, are more
successfully

ſucceſsfully managed. A moderate degree of joy removes the noxious particles of the body, and in this reſpect is equal, nay ſuperior in ſalubrity, to bodily exerciſe; but exceſs and too long duration of this paſſion diſſolve and carry away not only the ſuperfluous, but likewise many uſeful fluids, and more than the natural functions can reſtore. Hence, this too violent motion and diſſipation of humours is attended with relaxation and heavineſs; and ſleep alſo is prevented, which alone could moderate the nerves, that have ſuffered from too great tenſion. On this account, the celebrated SANC-TORIUS diſſuades perſons from gambling who cannot control their paſſions; becauſe of the joy attendant upon their ſucceſs, followed by reſtleſs nights, and great abſtraction of perſpirable matter. Sudden and exceſſive joy may prove extremely hurtful, on account of the great waſte of energy, and the lively vibration of the nerves, which is the more noxious after long reſt. Nay, it may become dangerous, by cauſing expanſion and lacerations of the veſſels, bloodſpitting, fevers, deprivation of underſtanding, ſwooning, and even ſudden death. If we have foreſeen any joyful event, the body is gradually prepared to undergo the emotions connected with it.—For this reaſon, we ought to fortify ourſelves with the neceſſary ſhare of firmneſs and com-poſure, to meet joyful as well as diſaſtrous tidings.

Laughter is ſometimes the effect or conſequence of joy; and it frequently ariſes from a ſudden diſ-

appointment of the mind, when directed to an object which, instead of turning out serious and important, terminates unexpectedly in insignificance. Within the bounds of moderation, laughing is a salutary emotion, for, as a deep inspiration of air takes place, which is succeeded by a short and frequently repeated expiration, the lungs are filled with a great quantity of blood, and gradually emptied of it: so that its circulation through the lungs is thus beneficially promoted. It manifests a similar effect on the organs of digestion. Pains in the stomach, colics, and several complaints that could not be relieved by other means, have been frequently removed by this. In many cases, where it is purposely raised, laughing is of excellent service, as a remedy, which agitates and enlivens the whole frame. Experience also furnishes us with many remarkable instances, that deep-seated ulcers of the lungs and the liver, eluding every effort of art, were happily opened and cured by a fit of laughter artificially excited.

Hope is the anticipation of joy, or the presentiment of an expected good. It is attended with all the favourable effects of a fortunate event, without possessing any of its disadvantages; because the expectation of happiness does not affect us in so lively a manner as the enjoyment of it. Besides, it is not liable to those interruptions, from which no human pleasure is exempt; it is employed principally with ideal or imaginary objects, and
generally

generally keeps within the bounds of moderation ; lastly, the sense of happiness contained in hope far exceeds the satisfaction received from immediate enjoyment, consequently also has a more beneficial influence on health, than good fortune realized. Although hope is, in itself, merely ideal and illusive, and presents its flattering and embellished images to the fancy in a borrowed light, yet it is nevertheless, if thoroughly considered, the only genuine source of human happiness. Hope, therefore, is the most favourable state of mind to health, and has frequently preserved the well-being and prolonged the existence of those, whose circumstances were the least promising.

Love, viewed in its most favourable light, presents to us a picture of permanent joy, and is attended with all the good effects which joy produces. It enlivens the pulsations of the heart and arteries, promotes the exercise of the different functions of the body ; and it has frequently been observed, that a strong attachment to a beloved object has cured long standing and wasting disorders, which had resisted all medicinal powers, and which often had been considered incurable. The changes which this passion can effect on the powers and the whole disposition of the mind, are equally remarkable. For, the extraordinary exertions, to obtain possession of the object of our wishes, excite a sensation and consciousness of strength, which enables man not only to undertake, but also to perform

things of the most astonishing nature. In that exalted state, he sets all difficulties at defiance, and surmounts every obstacle. It deserves, lastly, to be remarked, with regard to this as well as most of the other passions, that the object of a favourite inclination may again excite the suppressed feelings, or the lost sense of every other object.

Sorrow is the reverse of joy, and operates either suddenly or slowly, according as the cause of it is of greater or less importance and duration. The lowest degree of it is called *Concern*;—when it arises from the disappointment of hopes and endeavours, it now is *Vexation*;—when silent and thoughtful it settles into *Pensiveness* or *Sadness*;—when it is long indulged, so as to prey upon, and possess the mind, it becomes habitual, and grows into *Melancholy*.—Sorrow increased and continued, is called *Grief*;—when tossed by hopes and fears, it is *Distraction*;—when all these are swallowed up by it, it settles into *Despair*.—The highest degrees of sorrow are called *Agonies*.

Sorrow rarely proves suddenly fatal; for, though it destroys the nervous energy, it does not hasten the circulation of the blood, with the rapidity of other passions, but rather retards its course. Yet, there are examples of its speedy and fatal effects.—Not unlike a slow poison, sorrow crushes and overcomes the powers of mind and body; it weakens the whole nervous system; the heart beats progressively slower; the circulation of the blood and
other

other fluids becomes more inert; these fluids frequently stagnate in their channels, and generate evils more serious than sadness itself. Further, the face turns pale, and at length yellow and tumid, the body and mind are worn out; the course of the blood through the lungs must be assisted by frequent sighing; the appetite and digestion become vitiated; and thus arise obstructions, hysteric and hypochondriacal complaints, and, at length, complete consumption, which is inevitable destruction to the body, frequently in the prime of life, and in spite of the healing art. Persons who indulge themselves in fretting, very soon lose their appetite, together with the power of digestion; their mouth has a bitter taste; flatulency, colic, spasms, faintings, and the long list of stomachic complaints necessarily follow. Men become subject to the blind hemorrhoids; women to suppression or other irregularities of the menses, costiveness, or chronic diarrhœa. The bile, on account of the retarded circulation, either grows hard and produces indurations of the liver, or it is mixed with the blood, and generates jaundice or dropsy. Such persons become in time excessively irritable and peevish; with the constant return of grief, the mind, at length, is totally employed in contemplating its wretched situation, so that it finds new food for increasing it in almost every object it beholds. Thus the whole imagination is by degrees unhinged, and the most usual consequences of it are, the deepest

melancholy—succeeded either by a nervous fever, or complete insanity—sometimes cancer, and at other times a speedier dissolution by what is then called, *breaking the heart*.

Solitude and idleness not only are the remote causes of many passions, but also support and foster all the deep-rooted affections, since they collect and fix the attention of the mind on certain individual objects, and make us reflect the more keenly on the causes of the passions, the less we are interrupted in these fond reveries, by other sensations. Though it be infallibly certain, that it is not in our power to avert grief, from which even sages and heroes are not exempted; yet we can do much by not indulging in it, or rather by denying ourselves the enjoyment which grief in certain situations affords. Moral arguments of consolation, if properly adapted to the capacity and mental disposition of the sufferer, have in these cases likewise a powerful influence. Those whose minds are affected by sorrow, ought to avoid as much as possible the company of persons, who are fond of relating their calamities, and recounting their misfortunes. On the contrary, whatever has a tendency to cheer the mind, and to divert it from disagreeable objects, ought to be instantly resorted to. Of this nature are, company, business, cheerful music, the social affections.—The body should be frequently rubbed with dry cloths, perfumed with amber, vinegar, sugar, and the like; and the lukewarm bath

bath may be employed with great advantage ; and, if circumstances permit, the patient should remove to a warmer and drier climate.—If temperately used, a weak and mild wine is here of excellent service, but an immoderate indulgence in wine may disorder the stomach, by the quantity of acid it contains.

Weeping generally accompanies sorrow, if it be not too intense : tears are the anodynes of grief, and ought not to be restrained by adults. We feel in weeping an anxiety and contraction of the breast, which impedes respiration ; probably, because then a superfluous quantity of air is contained in the lungs, which is forcibly expelled by sobbing. By this obstruction in breathing, the blood, which ought to be reconducted from the head, accumulates in the lungs, and consequently also in the veins ; hence arise redness, heat of the face, and a flow of tears, which are regulated in quantity by the degree of sadness that produced them. Their principal advantage consists in averting the danger to be apprehended from grief, by diminishing the spasmodic motions in the breast and the head, and by restoring regularity in the process of respiration, as well as in the circulation of the blood : hence people find themselves much relieved after a plentiful flow of tears, except that they are extremely hurtful to the eyes.

Grief arising from an ungratified desire of returning home and seeing our relations, is productive

tive of a disease very common among the Swifs, and which sometimes, after a short state of melancholy, trembling of the limbs, and other symptoms apparently not very dangerous, hurries the unhappy sufferer to the grave, but more frequently throws him into a consumption, and generates the most singular whims and fancies. Persuasions, punishments, medicines, are here of no service; but a suddenly revived hope, or gratification of the patient's wishes, have a powerful effect; provided that a complete consumption, or insanity, have not already taken place.

There is also a singular hysteric or nervous fever, seizing many unfortunate sufferers in mental disorders, and which was first accurately described by RICHARD MANNINGHAM. Debilitated persons, and those of great sensibility, of both sexes, after melancholy affections and other exhaustions of strength, are particularly subject to this disorder. It begins with irregular paroxysms, and manifests itself by an undefinable indisposition, a dry tongue without thirst, anxiety without a visible cause, want of appetite, a low, quick, and unequal pulse, a pale and copious urine, occasional sensations of cold and shivering, sometimes clammy sweats, sometimes colic, sleeplessness, and distraction. According to the experience of Manningham, this fever generally terminates, in the course of thirty or forty days, by faintings, silent reveries, and death; unless it be relieved, in the beginning, by bracing and strengthening remedies.

Among

Among the mournful passions we may also include an *extravagant degree of love*, or such as transgresses the boundaries of reason. It is then no longer a pleasure, but a disquietude of mind, attended with the most irregular commotions; it disorders the understanding; gradually consumes all the living powers, by a slow fever; prevents nutrition, and reduces the body to a skeleton. All the passions, indeed, may in their more violent degrees occasion a depravation of the understanding; but sorrow and love are peculiarly calculated to produce so fatal an effect. This mental disorder, to which both sexes, but principally women, are subject, should be opposed in time, by physical as well as moral remedies.—Much may be done here by education, and a proper choice of society. The imagination should be withdrawn from such images, as may encourage inordinate and excessive love; and it cannot be denied, that young females in particular are frequently precipitated into this weakness, merely by reading improper novels. This imbecility of mind becomes the more dangerous in young people, as it is generally increased by solitude, and their ignorance of the real world.—Exalted ideas of virtue, of greatness of mind, and a generous self-denial, are excellent antidotes; but, if the body sink under the weight of passion, even these exertions are insufficient to support the energy of the mind. The physical remedies to be resorted to in these situations are, rigid temperance, a frugal

gal and less nourishing diet, constant employment, and much exercise; but the most successful of all, is a happy marriage.

Of all the passions that can aid the medical art, there is none from which we may expect greater benefit, than from a rational gratification of love. On the contrary, a too ardent passion is attended with the most dangerous physical consequences: it is nearly related to disappointed love, which usually shews itself by a reserved melancholy, a general distrust, and a complete misanthropy, which however externally appears only under the character of lassitude and depression. It is apt to be followed by a suppression of the menses, consumption of the lungs, and even insanity.

Disappointed love is extremely detrimental to health, and gradually destructive of the body; it sometimes produces *furor uterinus* in females of a hot temper and romantic turn of mind, unless the passion itself be radically cured.

The most dangerous effect of love is *jealousy*;—this pitiful affection, like disappointed love and pride, is very liable to terminate in madness*.—In sanguine temperaments, the excess of this affection is productive of consequences most prejudicial

* In the houses devoted to the unhappy victims of insanity, we generally meet with three different classes. The first consists of men deprived of their understanding by pride; the second of girls, by love; the third of women, by jealousy.

to the body. Their fluids are impelled to a more rapid circulation, and secrete, with preternatural rapidity, that valuable fluid which stimulates them to venery. Upon the whole, such persons are much addicted to ease, pleasure, and every species of gratification, which suits their irritable nerves : their skin and muscles being soft and accessible to every stimulus, their fluids thin and rarefied, it may be easily conceived, that their humours circulate with rapidity to the parts of generation, and that their nerves are thus constantly excited to desire. The dreadful consequences are but too frequently visible in young persons, whether single or married, who have too early indulged in such excesses. Hence originate, *tabes dorsalis*, wasting of the limbs, spitting of blood, pulmonary consumption, hectic fever, and the whole train of unaccountable nervous diseases, so called for want of more proper names ; besides a host of other disorders, mostly incurable.

In order to prevent, or at least to oppose, the torrent of these and similar passions, man ought not only to be seriously apprized and convinced of his danger, and the dreadful misery which follows intemperance and excess in this point ; but he must also submit to a strict and regular mode of life, if he aspire to rise in the dignity of his nature above the rank of the lower animals. He is a rational being, though his sensitive faculties every where remind him of his animal nature. Hence
the

the following particulars cannot be too much attended to : a constant and useful employment ; salutary exercise of the body, till it be moderately fatigued ; temperance in eating and drinking ; abstinence from strong and heating food and liquors ; bracing and hardening the body ; avoiding the habits leading to effeminacy, solitude, and too much rest ; lastly, a strict attention, from early youth, to the most rigid modesty and purity of manners.

Envy arises from self-love or self-interest, particularly in such individuals as have neglected to cultivate their own talents, or to whom nature has denied certain qualifications of body or mind, which they cannot avoid seeing in others, and especially when they are witnesses of the prosperity of the persons possessing such superior qualities. People of a narrow mind, and those of a confined education, are most subject to this mean passion. Envy deprives those addicted to it, of appetite for eating, of sleep, of every enjoyment, and disposes them to febrile complaints ; but in general it is hurtful to those only, who brood over, and give way to this corrosive affection. For the world contains vast numbers, who show their envy at almost every event productive of good fortune to others, and who yet attain a very great age. Joy at the misfortunes, or the discovered foibles of others, self-flattery, calumny against their neighbours, satire and ridicule, are the never-failing

ing resources of these malignant dispositions. Medicines cannot cure a passion so vile; education and improvement of morals are its only antidotes. Envious persons commonly give too much importance to trifles. Hence, they ought to be instructed to employ themselves in more useful pursuits; to judge of things according to their true value, and to accustom themselves to a philosophic coolness: they ought to learn, how to overcome, or at least to moderate, their selfishness; to balance their expectations with their deserts, and to equal or surpass others, in their merits rather than in their pretensions.

Fear or *anxiety* is the apprehension of evil. Fear weakens the powers of the mind, relaxes and congeals every part of the human body, retards the pulse, hinders respiration, obstructs the menses, sometimes also perspiration; hence it produces tremor and dread; frequently too it excites perspiration, since it disorganizes every thing linked to the body by means of the nerves. It is apt to occasion diarrhœa, and, in some individuals, an involuntary discharge of semen. Persons of a relaxed habit are, by great fear, thrown into a perspiration resembling the agonies of death; while others cannot retain their urine. The timorous are more readily attacked by epidemical disorders than those possessed of courage; because fear not only debilitates the energy of the heart, but at the same time promotes the absorption of the skin, so
as

as to render the timid more liable to contagion. Upon the whole, fear increases the malignity of diseases ; changes their natural course ; aggravates them by a thousand incidental circumstances, so that they resist all remedies, and suppresses the efforts of nature so as to terminate in speedy dissolution. The usual consequences of violent and superstitious fear, produced by a disordered imagination, are eruptions in the face, swellings, cutaneous inflammations, and painful ulcers. In some instances, too, fear has produced palsy, loss of speech, epilepsy, and madness * itself.

Bashfulness is an inferior degree of fear, which retains the blood in the external vessels of the face, the breast, and the whole body. Hence, in females of a delicate constitution, and transparent skin, we observe the blushing not only in the face but also in the bosom. If carried to a greater degree, it is attended with consequences much more important, particularly in the individuals before-mentioned : it may stop the flux of the menses and prove fatal, if an attack of a fever should accelerate the catastrophe.—A very high degree of bashfulness may generate a dangerous fever, even

* One instance of this effect I have myself witnessed, in a gentleman, now living in Edinburgh, who was at Lisbon in the awful earthquake of 1755 ; and who, from the great fright which seized him upon seeing whole streets tumble down before him, has been deprived of his understanding ever since that period.

in men ; though, from modern education, instances of this kind become every day more rare. An extravagant degree of bashfulness closely borders on fear : if the question does not proceed from vice or corrupted manners, it may be corrected by social intercourse with people of a cheerful disposition.

Terror, or the dread of an evil surprising us, before we are able to prevent it, is of all affections the most destructive, and the most difficult to be avoided, because its operation is unforeseen and instantaneous. To shun all the opportunities that may lead to it, is perhaps the only remedy. Persons who are feeble and possessed of much sensibility, are most subject to terror, and likewise most affected by it. Its effects are, a sudden and violent contraction of almost every muscle, that serves to perform the voluntary motions. It may further occasion polypous concretions of the heart, inflammations of the external parts of the body, spasms, and swoons ; at the same time, it may stop salutary evacuations, particularly perspiration and hemorrhages ; it may repel ulcers and cutaneous eruptions, to the great detriment of health, and danger of life. The menses are sometimes instantaneously stopped by it : palpitation of the heart, trembling of the limbs, and in a more violent degree, convulsions and epileptic fits, or a general catalepsy, and sudden death itself, are the subsequent effects. As terror quickly impels the blood to retreat from

the skin to the internal parts, it very forcibly checks the circulation of all the fluids. If anger be mixed with terror, there not unfrequently arise violent hemorrhages, vomiting, and apoplexy. Terror has been known at once to turn the hair grey.—An inattentive and ill-directed mode of educating children, often lays the foundation of this error, which is difficult to be eradicated at a more advanced age. Persons under the influence of this passion, should be treated like those who suffer from any other spasmodic contraction. Tea, a little wine, or spirits and water may be given to them; vinegar, lavender-drops, or spirits of hartshorn may be held to the nostrils; warm bathing of the feet, and emollient injections may be of advantage; and, upon the whole, the different evacuations ought to be promoted;—but, above all things, the mind requires to be duly composed.

Anger arises from a sense or apprehension of suffered injustice, and the impetuous desire of revenge. Its different degrees depend upon the impressions made by the injury, or the malignity of the disposition to vengeance. In the former case, namely, when the sense of injustice is the prevalent feeling, anger affects us like terror, and produces spasmodic contractions and stagnations in the liver and its vessels, sometimes so considerable as to change the bile into a concrete mass; hence, from this cause alone, often arise the gravel and stone of the bladder. More obvious consequences of anger, if

joined to affliction, are paleness of the face, palpitation of the heart, stammering of the tongue, trembling of the limbs, and jaundice.

If, on the contrary, the hope of revenge be the prevailing feature in anger, violent commotions take place in the whole system; the circulation of all the fluids, as well as the pulsations of the heart and arteries, are visibly increased; the vital spirits flow rapidly but irregularly through the limbs; the muscles make uncommon efforts, while some appear almost palsied; the face turns burning red; the eyes sparkle; the whole body feels elated and inclined to motion. This species of anger is by far the most common.

Anger and terror are, therefore, particularly hurtful to the tender bodies of infants, who are possessed of extreme sensibility, easily affected, and consequently much exposed to these passions, on account of the proportionably greater size of their nerves, and their inability to correct passion by the influence of reason. They are liable to be so severely affected, that they may suddenly die in convulsions, or retain for the whole life a weakly body, terrified upon the slightest occasions. When children are apt to cry in sleep, when they start up and make motions indicating fear or terror, it must not be always ascribed to actual pain, but frequently to dreams, which fill their young minds with terrible images, especially when from a bad custom they are often frightened while awake. All parents

know, how much some children are addicted to anger and malice, and how difficult it is to stop the ebullition of these passions. Hence, we ought to beware of giving the most distant encouragement to such destructive emotions. For it is certain, that both men and women of an irascible temper generally die of a consumption of the lungs.

Persons of an irritable disposition are more frequently exposed to anger than others; they are more easily acted upon by every affection.—Hence the tendency to anger is particularly visible in individuals troubled with hysterics and hypochondria, as well as in debilitated and disappointed men of letters. But persons of a hot and dry temperament, of strong black hair, and great muscular strength, are likewise much subject to fits of anger.

A moderate degree of this passion is frequently of advantage to phlegmatic, gouty, and hypochondriac individuals, as it excites the nerves to action; but, if violent and rising to rage, it dissipates the more volatile parts of the fluids, and is productive of the most noxious consequences. In the epileptic, scorbutic, choleric, and such as have open wounds, it causes fever, spitting of blood, convulsions, inflammations, throbbing pains in the side, jaundice, apoplexy, &c. No fluid is more affected by anger than the bile, which by its violent influx into the *duodenum* produces a fixed spasmodic pain in the region of the navel, flatulency, vomiting, a bitter taste in the mouth, anxiety and pressure about the
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pit of the stomach, and, at length, either obstructions or diarrhœa.—Wine or other heating liquors, drank immediately after a fit of anger, strong exercise or labour, are attended with consequences still more pernicious, as are also emetics, laxatives, and blood-letting. The propensity to anger is increased by want of sleep, by heating food and drink, bitter substances, much animal food, rich soups, spices, and, in a word, by all things that have a tendency to inflame the blood. On the contrary, persons subject to this passion should use diluent, acidulated, and gently aperient drinks, and observe in every respect the most rigid temperance. Such persons ought to sleep more than others; and employ the lukewarm bath, gentle cathartics of cream of tartar or tamarinds, fruit, butter-milk, whey, vegetable aliment, &c.—Among other arguments against anger, young people, particularly females, should be forcibly convinced, that besides the physical dangers attendant on this passion, it, like all the impetuous emotions of the mind, deforms the face, deprives them of every charm, and induces a strong aversion to such companions. Those who feel the approach of anger in their minds, should, as much as possible, divert their attention from the objects of provocation; for instance, by reciting a passage they have learnt by heart; or, as Julius Cæsar did, by repeating the Roman alphabet.

Inward fretting, in which sadness is combined with anger, is the more destructive, that it does not discharge itself in words, or external actions. There may arise from it giddiness, inclination to vomiting, sudden pain in the side, great anxiety, and similar complaints. Somewhat related to this affection is, what a German author calls the "*mal de cour*;" a cruel malady, which comprehends anger, avarice, envy, and sadness. From that sense of neglect and unmerited injury, whether real or imaginary, which torments courtiers, the habitual ill humour of a great proportion of this class of men leads them to avenge their disappointment, by oppressing and ill-treating their dependants. To accustom themselves to consider the physical and moral vicissitudes of life, and the perishable nature of all terrestrial happiness, with becoming coolness; to enlarge their minds by the acquisition of useful knowledge, are the best remedies to be opposed to this kind of chagrin.

When sadness or fear have so much seized the heart and the understanding, that all hopes of averting the evils apprehended, are extinguished, the mind sinks into *Despair*. We then see no comfort in futurity, and our ideas of the approaching evil become so dreadful, that we think ourselves incapable to sustain it, and seek no other remedy but death. There are attacks of despair, and an inclination to suicide, in which people are, upon any unforeseen

unforeseen event, suddenly deprived of their understanding, and reduced to temporary insanity. This precipitate species of despair more nearly resembles terror. Others are solitary and reserved; continually brood over their misfortunes, till at length all their hopes and resolution fail. Their despair, consequently, is more nearly allied to melancholy, than any other passion. A sudden fit of despair is owing to very irritable muscular fibres, which are quickly excited to the most extraordinary motions, and from which arises confusion in the senses, and in the representing faculty. In profound thinking and melancholy individuals, the solid parts are weakened, the fluids become thick, heavy, and stagnating. This weakness of the solids gives them a sensation of peculiar debility. They are dispirited and dejected; their stagnating, or, at best, slowly circulating fluids, occasion in them a sense of anxiety and timidity; whence gloomy representations are but too easily impressed on their minds. This is very apt to be the case with persons who eat more animal than vegetable food, which produces very rich and substantial blood. From this source, some authors derive the choleric disposition of the British in general. It is also said of the Negroes, that they are more subject to melancholy, and even to suicide, because their blood is more compact, florid, and substantial than that of the Europeans. The ambitious are likewise

frequently seized with this affection, when they meet with any thing to give them offence or obstruct their views in life. Prodigals, and those who are strangers to the troubles and difficulties of life, are not less subject to fits of despair, whenever they are reduced to a state of adversity. Too rigid conceptions of virtue have also, though more rarely, been the occasion of this insatuated passion. The cautions and rules for preventing despair and suicide, are the same which must be employed to counteract such other affections, as generate and afford fuel to the sufferer; but they must be modified according to the temperament of the individual; and the cure of such evils ought to be directed principally to the body, and partly also to the mind.

Nothing, indeed, is better adapted to protect us against all the uneasy and turbulent emotions of the mind, than a temperate and active life: as, on the contrary, intemperance unavoidably occasions irregular commotions in the fluids, and may be the source of all mental troubles and disorders. Hence PYTHAGORAS advised his pupils to abstain from animal food, which excites wrath, with all the other passions and desires. Idleness and want of exercise, are not less productive of many malignant affections. It cannot be doubted, that those who, at an early, docile age, combine solid principles of virtue with a sober and active life, and
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who are by frequent examples reminded of the turpitude and disadvantages attending violent passions in others, will themselves be less tempted by these enemies to human life. Yet it is much more difficult to suppress passions that have already made some progress; in which cases censure and rational remonstrances are seldom availing. To those, however, who have not reached such a pitch of obstinacy, as to be beyond taking advice, the following hints may not be without advantage.

1. To remove, without delay, the object that gave rise to the passion, or at least to deprive it of its nourishment, so that it may die of itself; and for that purpose to remove instantly to some other place, which presents a different scene.

2. One affection frequently assists in subduing another of an opposite nature; as to inspire the timorous and fearful with courage and boldness; the angry, with fear; the too violent lovers, with hatred, and so forth.—This, however, is seldom practicable.

3. Let us direct our thoughts to other objects of pursuit, such as public amusements, the chase, travelling, agreeable company, or other favourite employments of an useful and appeasing nature.

4. *Music.* Nothing is so well calculated to moderate and calm the nerves, to quiet the mind, and to assuage the passions; provided the hearer possess a musical ear and feeling, and that the kind of music be adapted to his particular taste and situation.

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Hence we cannot be too much on our guard in the choice of music, as certain kinds of it have a tendency, rather to increase than to allay the paroxysm of passion.

5. The state of perspiration deserves particular attention. For it is confirmed by numberless experiments, that passions decrease in the same degree as perspiration is increased, particularly if they be of such a nature, as to check insensible perspiration; for instance, melancholy, terror, fear, and the like.—All the different evacuations are, indeed, beneficial in this case. Lastly,

6. Let us make use of no medicines immediately after a fit of passion. The most advisable regimen consists in temperance in eating and drinking, particularly in abstaining from hard, indigestible food, cold drinks, and cold air. We should better consult our health, after any such emotions, by keeping ourselves moderately warm, drinking tea, or some similar beverage. After a very violent paroxysm of anger, it is sometimes necessary to open a vein, in order to prevent inflammation; or to cause the evacuation of the bile by an emetic; which cases, however, are to be determined only by professional men.—The saliva should not be swallowed in such a situation; for it is supposed to have a slightly poisonous quality.—Persons under the influence of terror sometimes stand in need of a cordial; but the melancholy will find in wine and
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other strong liquors rather an uncertain remedy, or which, at best, is only palliative: and, if immoderately used, they must necessarily promote sadness, as well as every other passion, which these supposed anodynes, in the end, always increase by their peculiar effects.



CHAP. XI.

Of the different ORGANS OF SENSE, and their respective functions—Of the supposed Seat and Operation of the Soul—Motion—Muscular Action.

BEFORE we proceed to investigate the individual characters of the different senses, as well as their offices in the human body, it will be useful, if not necessary, to premise a short analysis of *sensation*, or, in other words, of the seat and operation of the soul.

The ancients imagined the seat of the soul to be in the stomach, because of the acute feeling of this organ, and the prodigious number of nerves, with which it is provided and connected with other parts. But it is now universally admitted by physiologists and anatomists, that the operations of the mind are carried on principally in the brain; that this is the point of union, in which all the nerves meet, and which is to be considered as the assemblage of all sensations, or the *sensorium commune*. It is the brain, which is in the most immediate connection with the representing faculty; here all the nerves are as it were concentrated into one point. Prof. SOMMERING, of Mayence, has lately endeavoured to prove in a very ingenious publication, that the ventricles of the brain properly contain

contain the more immediate cause of the various functions of the soul; that there is a fluid, or at least a vapour, secreted from these parts, in consequence of the activity of the mind exercised in the ventricles of the brain; and that all the changes of the intellect, in human beings, depend upon the diversity of the structure of these ventricles, and the various states of vigour and mental energy there displayed.

Without attempting to decide upon a question so remote from human investigation, I may be allowed to observe, that all conjectures respecting the seat of the soul are in reality frivolous and premature, until we have ascertained, in what manner the important functions of the brain, which is intimately connected and thoroughly blended with the nerves, are discharged within the cranium; whether this be done by vibrations, by secretions of humours or vapours; or by the peculiar manner in which the numerous blood-vessels are disposed in the brain, so as to allow, perhaps, the blood to exert its influence, and to produce all the changes going on in that quarter, by the force and momentum of its own circulation;—all these particulars must be ascertained, before we can form any just conjectures, as to the situation of the soul.

This much, however, is certain, that one of the principal offices of the nerves consists in communicating to the brain those impressions, which are made on the body by external objects. As soon

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as, by means of this communication, a certain change takes place in the brain, the mind becomes conscious of it, or, in other words, we feel it. But every perception must be acquired through the senses; because the impressions, of whatever kind, must previously strike the organs of sense, before they can be propagated to the nerves.

Although it be established and admitted, that the nerves are the medium, by which all the operations between body and mind are carried on; yet no philosopher has hitherto been able to discover the last chain or link by which they are connected, or the extreme point in which they meet. Much, however, depends here upon the idea we form of the mind. It appears, from the contradictory opinions which, from time to time, have prevailed on this interesting subject, that the inquirers have been too much in the habit of shifting off the materiality of the soul; and yet they assigned it a certain place of residence in the body, which to this day is imagined to be in either one or other part of the brain. I conceive the soul to be the elementary power and the maximum of all powers in the animal body. And why should we hesitate to consider matter (of the *primary* properties of which we are but little informed) as perfectly simple and yet extremely operative?

The mind, then, is probably not confined to any particular part of the body, neither exclusively to the brain, to the stomach, nor to the blood; but
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distributed through the whole body, always one and the same power, save that it is sometimes more, sometimes less concentrated; and, if I may be permitted to say so, it is a pure, elementary, ethereal agent. In the *brain*, it displays its principal powers: here are seated consciousness, the power of thinking and judging, memory, and all the higher faculties of the mind. But here, too, different parts of the brain seem to contain different powers, so that memory, probably, occupies more the external crust, and the power of thinking the anterior substance of the brain.—With respect to memory, it is remarkable, that nervous and epileptic patients are usually deprived of that faculty, before any other of their mental powers be impaired. Perhaps the efficient cause of the disease has not penetrated the brain deep enough, so as to affect the seat of the understanding and judging faculties; till at length, with the progress of the disease, the higher powers of the mind become likewise affected. Even the lower faculties, the emotions of the mind, and the various passions, appear to be situated in different organs. Thus, the seat of terror and anger seems to be in the stomach, and in the biliary system; the more amiable feelings, as philanthropy, compassion, hope, love, &c. seem to be situated in the heart; fear and surprise, in the external surface of the head and back; sudden pain, in the breast.

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The next question arises, how are these powers put in motion and activity? Has the assemblage of these powers, or the *sensorium commune*, an original and independent capacity of receiving ideas; of forming new ones from its own materials; of being conscious of these internal sensations, and of comparing them, so as to reproduce others, through itself, and from its own source? I am inclined to answer these questions in the affirmative. For, as soon as the senses are stimulated, we feel it exactly in the place to which the stimulus was applied. Every such sensation is reflected on the sensorium, where it makes a real, corporeal, and sensible impression; an image is imprinted on the mind, and is communicated to the senses. All this is accomplished by means of the nerves, because the nervous energy appears to be more nearly allied to the mind, than any other power. The more frequently, therefore, the same stimulus and impression be repeated, the more firmly the idea of it is imprinted, and the longer we retain the impression. If the stimulus be too violent and permanent, or if an impression of too many objects be at once made on the brain, our nerves experience the same relaxation, as the chords of an instrument, after a strong and repeated tension.—Man, when he is without clear consciousness, and in the moment of confusion, feels as if his mental powers were palsied, or had suffered a temporary suspension. In
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a severe disease, and previous to death, we perceive the ideas of early life vanish first; we lose the impressions of such ideas on the brain more readily, in proportion to the distance of time when these impressions were made, or accordingly as they have been more or less frequently repeated. If eventually the patient recover, he may without difficulty observe, how progressively one after the other of the suppressed ideas re-appear in the head, exactly as if they had been there stored up, and remained in a latent state, till the soul attained sufficient energy to recall them.—From this indubitable fact, I am disposed to deduce a stronger argument for the immortality of the soul, than from any other physiological source.

The organs by which the sensitive powers of the nerves can be excited from without, are called the external organs of sense; in contradistinction to the *internal* senses, such as imagination, memory, attention, and the various affections of the mind. The latter we exclude from the present inquiry, which is directed to the *external* senses alone. The number of these has been hitherto limited to *five*, or, it may be said with more propriety, that there are five modifications of *one* sense. This universal sense, which in a manner forms the basis of all others, is that of *Touch*. If we abstract from the difference subsisting in the structure of the organs, the other senses are subservient to that of touch, and little more than a variety or modification of it.

All the senses agree in this, that they may be improved by exercise, or depraved and blunted by neglect : nature has not formed them to the same degree of perfection in every individual. The loss of one sense is, in general, amply supplied by the greater perfection of another ; yet it is equally true, that exercise and attention are the principal sources of this improvement. In the most perfect state of our senses, we are liable to be misled by them into many errors and mistakes ; but the sense of touch or feeling is least exposed to deceptions, while that of sight is the most uncertain. The order in which we shall consider the five senses hitherto admitted as being distinct from one another, is the following : viz. 1. *Touch* ; 2. *Sight* ; 3. *Hearing* ; 4. *Smell* ; and 5. *Taste*.—Beside these, there are perhaps several others, which deserve to be added to that number ; such as hunger and thirst, and the sensations peculiar to the different sexes. If these be not admitted as distinct from the five others, we may still discover a *sixth* sense in the animal œconomy. And, though this additional sense is chiefly manifested in diseases, and scarcely discoverable in a healthy state of the body, yet its existence is so obvious to patients in chronic disorders, and particularly in palsy, gout, and rheumatism, that they are enabled, by this new sense, to ascertain with wonderful accuracy, not only the present state, but also to predict the impending changes of the atmosphere.

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Without losing time in abstruse disquisitions respecting these occult senses, I proceed to examine those which are more generally known.

The *first*, namely, that of *Touch*, comprehends not only the sensation which is excited by any particular impression, but also that change which external objects produce on the skin, and particularly on the points of the fingers. It is in the latter, and more limited meaning, that I now consider the sense of touch. In order to understand more clearly the great importance of this sense, I shall premise a concise description of the external integuments of the human body. For there is no doubt, that the skin is the mirror of all the senses, and, if I may be allowed the expression, it is the most unerring guide, and least subject to the illusions of the imagination.

The whole human body is inclosed in certain integuments or covers: they consist of *three* different layers, each of which is wisely designed by nature for the protection, utility, and ornament of the body. The uppermost, that is, the scarf-skin, or epidermis, is the thinnest of the three, and is nearly transparent. It covers the whole body, both externally and internally, not only the mouth, stomach, and bowels, but also every cavity and protuberance of the body; as it forms the upper skin of most of the intestines, the lungs, the heart, the liver, the spleen, &c. This covering is of great service to the whole frame, by protecting the parts

inclosed in it from external injury, by preventing them from growing together internally, and by keeping every thing within the body in its proper situation. It is destitute of sensation, which even children know, since they run pins between it, without feeling pain. But it is possessed of the admirable property, that it is very quickly renewed, after it has been destroyed by accident, or by the measles, scarlet-fever, and similar diseases.

Immediately under this universal and uppermost covering of our body, there lies a second, reticular, and mucous membrane, which has received from anatomists the name of *rete mucosum*. It is in most parts of the body extremely thin, but it grows considerably thicker in others, for instance, on the heels and the palm of the hand.

This second skin deserves particular attention, as it is the seat of the colour in different nations; though the cause of this diversity has not yet been discovered:—in the Negroes it is black, in the American Indians nearly resembling the colour of copper, and in the Europeans generally white. That the colour of the human body is altogether contained in this second or middle skin, is sufficiently established; for, not only the third or true skin of the Negroes is as white as in the Europeans, but the uppermost or scarf-skin, too, though rather of a greyish tint, is scarcely darker in blacks than in white people; and in the latter also the middle skin frequently is of a yellowish, brown, or blackish colour;

colour; in which cases the whole external skin exhibits a similar appearance. This variety of colour has led some authors to suppose, that there is a variety in the origin, as well as in the mental capacities of different nations. So palpable an error, however, could not long remain undiscovered: and it is now almost universally admitted; that there is originally but one species of man, though there are no doubt various races of it; that the climate, the air, the sun, and the mode of living, produce all the difference in the colour, as well as in the structure of man. Thus we know, that those Americans, who live in the calmer western and mountainous regions, are not of so deep a copper-colour as those who are more exposed to winds and other contingent causes; that the inhabitants of the northern bank of the river Senegal are of a diminutive size, and of an ash-colour, while those of the opposite bank are black, and at the same time, tall and robust. We further know, that after some generations, the Negroes are bleached, and people of a white colour become black, when the former emigrate to the cold northern, and the latter to the torrid southern climates. This difference is also discoverable in our climate, where people moving much in the open air and sunshine, acquire a dark colour, somewhat resembling that of the swarthy Portuguese. But, that there may be also a colouring substance in the blood, whether owing to the iron said to be contained in this fluid, to the

bile, or to an excess of what the old chemists called *phlogiston*, all of which may have a share in the modification of colours, I am much disposed to admit; because the blood, bile, brain, nay the very vermin on the bodies of the *Æthiopians*, partake of their native colour.

The *third* and innermost of the integuments of our body is the true skin, or the *cutis vera*, which immediately covers the fat and the muscles. It is of a compact, interwoven, cellular texture, which is very thick and smooth on its upper surface, of a white colour in all nations, loose or pliable on its inner surface, and furnished with more or less fat. It not only possesses a considerable degree of expansibility, and contractility, but is also provided with numberless small holes or pores. Its thickness varies in different individuals. It is pervaded by a great number of fine arteries, connected with one another in the form of a net, and which may be exhibited to the eye by injecting them with a red fluid, so that the skin then has the appearance of being thoroughly coloured. It is likewise furnished with an equal number of veins, and delicate absorvent vessels. On account of the many nerves which pass through this skin, it possesses an uncommon degree of sensibility, especially in those places, where we can perceive the *papillæ* of the nerves. These small protuberances are of different figures, of a reticular structure, and of a pulpy consistence. In some places, as the lips, they
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are not unlike flakes; though they generally resemble little warts. Such we observe on the points of the fingers and toes, on many other of the most sensible parts of the body, but particularly on the tongue. They are most visible on the ends of the fingers in delicate persons; they can be traced, with the naked eye, by the spiral lines terminating almost in a point, and are protected and supported by nails, which are inserted into the skin growing over them. It is in these papillary extremities, that every external impression is most clearly and forcibly perceived, on account of the number of nerves lying almost bare in these places.

The sense of touch can be improved and refined, by practice, to an astonishing degree. There are many examples of blind people having attained so great a perfection of this sense, that they could with accuracy distinguish the difference of coins, of metals, and even of colours, merely by the touch. I myself knew a blind man, who had learnt to take a watch to pieces, to clean it perfectly, and to put it together again, without any other assistance, but that of instruments commonly used, and the most exquisite sense of his fingers.

I have now only to describe the operation or mechanism of this sense.—When the nervous warts or papillæ are pressed against external objects, the nerves receive a kind of vibration, which is communicated to their branches, and, by means of these, to the brain. Thus we are enabled to feel

the hardness, roughness, moisture, warmth, gravity, figure, size, and even the distance of bodies. But, that this feeling may not become painful, the skin is provided with another cover, namely, the scarf-skin, which serves the important purposes of keeping off the air from the true skin, and preventing the body from being too much dried.—The nails increase the energy of touch, and render the sense of it more acute, as they resist the pressure of external objects.

The *second* of our senses, though less essential to life, is equally conducive to our welfare and safety. Without *Sight* we cannot justly contemplate the wonders of nature, and life is deprived of its greatest charms. An anatomical description of the eyes would lead us too far from the object of these inquiries, and could not be completely understood, without a more particular demonstration and description, than our limits allow.

In the sense of sight, we are far excelled by most of the lower animals. Eagles and hawks, in particular, descry their prey, when beyond the reach of our sight, though using a common telescope. Yet in men, also, this sense may be wonderfully improved, and I remember to have heard the famous *Baron Trenk* assert, that during his long captivity in the state-dungeon at Magdeburg, he had so much improved his sight, that he could see the mice traversing his gloomy cell in the middle of the darkest night—whether there was any exaggeration

aggragation in this assertion, I do not pretend to say.

The operations of sight are carried on in the most accurate manner. By the structure of the eyes, no other rays of light can pass into the inner parts, unless emitted within an angle not exceeding 90 degrees. Every thing here is regulated upon optical principles, the point of sensation excepted. This point is situated in the *retina*, or a membrane, having the form of a net, and being, as it were, the mirror, by which the objects there represented and reflected are conveyed to the mind. If this mirror be destroyed, as is the case in *amaurosis*, or *gutta serena*, our sight is irrecoverably lost.

All vision consists in the refraction of the rays of light, by means of the crystalline humour, till all the rays are concentrated into one image on the retina. The rays of light, while they pass through the arched surface of the *cornea*, or the horny skin, are broken and brought in contact with each other. This approach of the rays is still more promoted, while they pass through the more dense crystalline lens. At last, they arrive pretty close to one another at the spot where the vitreous humour is contained: here they again diverge, once more come in contact, and finally assemble in as many points, as are represented by the external object we look at. Through this image, which impresses itself on the retina, which is depicted there, and stimulates this membrane, the impression is com-

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municated to the mind ; this feels the stimulus, and produces the sensation of sight.

It is partly owing to the abovementioned refraction, partly to the constant and uniform reference to the internal sense, that in the act of vision we see the images in an upright posture before us, though they are properly imprinted on the retina, in an inverted posture. By this admirable mechanism in the fracture of rays, all images are invertedly presented to the eye, so that we cannot err in this respect, since the relation and proportion of things uniformly remain the same.

But it will be asked, how does it happen, that with two eyes, we see only one object ? This question is easily answered by some, who inform us, that with two nostrils we are sensible of only one particular smell, and with two ears we hear but one distinct sound ; that a similar external stimulus, in similar nerves, will always produce the same internal sensation, and that accidental deviations, or diseases only, can affect this principle. Yet the explanation now given is insufficient, in so far as it proceeds from analogical reasoning. If we wish to form a clear conception of this faculty, we must above all things direct our attention to the *axis* of vision, or that imaginary line, which we draw in a straight direction from the centre of the eye to the object, and which is prolonged before and behind the organs of sight. We must next advert to the situation in which the eyes are placed. They do
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not lie perfectly straight in their sockets, but somewhat in an oblique direction towards the nose. If then we prolong, for a little way only, the axis beyond the eye, we shall soon find, that the two imaginary lines meet in a certain point. This is called the *Focus*, or the point of vision—the termination of the external rays of light. If a person be able to see at a great distance, his lines of vision intersect each other at a greater distance from the eye, and consequently his focus is farther removed from it. This defect is called *presbyopia*, or far-sightedness, and may be remedied by means of convex glasses; but, if on account of too great convexity, or from an extraordinary converging power of the eye, the rays of light too soon unite in one point, and, as this point is placed before the retina, from whence the rays of light again diverge, vision becomes indistinct, till the object be brought nearer to the eye; in order to place the point of union, as it were, further behind the eye—this deficiency of vision is called *myopia*, or short-sightedness, and may be relieved by means of concave glasses. Of these, as well as other defects of the eye, and the most proper methods of preventing and curing them, I shall treat in the next Chapter. It further deserves to be remarked, that the optic nerves cross each other in the brain, and that we are accustomed, from our infancy, to see only one object at a time. Hence children should be so placed in bed, that they may not learn to squint,

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or that the eyes may not be directed upwards and outwards, but rather downwards and inwards, in order to habituate them properly to form the axis above described. That custom has great influence, in this respect, is obvious from the circumstance, that those who squint, not unfrequently see two objects at once; and that such eyes, as by accident or disease have become double-sighted, may, by continued exertions, be again habituated to see one object only.

Every one must have taken notice, that upon entering suddenly from a very dark place into bright sunshine, he could scarcely see any object, felt pain in the eyes, shed tears, or sneezed.—This temporary deprivation of sight is owing to the pupil of the eye being dilated in a dark place, and contracted again at the approach of light. The dilatation and contraction of the pupil is in proportion to the darkness or luminousness of the place. If the change from a dark to a bright place be very sudden, the pupil cannot dilate or contract quickly enough; it is, as it were, palsied, together with the retina, and we cannot see at all. The pain of the eyes, and the flow of tears under these circumstances, must be ascribed to similar causes. Every stimulus, whether occasioned by heat, cold, winds, colours, and the like, excites a certain sensation, which is agreeable, if the stimulus be mild and not too long continued; but which becomes painful and disagreeable, as it increases in violence and duration.

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There is another curious phenomenon to be explained, namely, that of *sneezing*, which is very often observed to take place, when we suddenly exchange darkness for a strong light. Here the same cause operates, though under different circumstances. The optic nerves consist of the second pair of the nerves of the brain; with these are united the third pair, the fourth pair, and some branches of the fifth and sixth pair. Yet the second pair, or the peculiar optic nerve, has the most important share in vision. It proceeds from the brain straight to the pupil of the eye, perforates this almost through the middle of its posterior internal part, where it terminates and divides itself, or, as it were, melts into a soft, downy skin, forming the *retina*, which covers a great part of the posterior internal eye.—Now, from the fifth pair of nerves there proceeds but one branch into the eyes, while another takes its direction to the nose. When the eye is suddenly impressed with the rays of light, that branch of the fifth pair which extends to the eyes, is stimulated in common with the other branch of the same pair proceeding to the nose. If, therefore, the stimulus be violent, it is communicated to both branches, that of the nose is likewise stimulated, and we are compelled to sneeze.

To conclude the account of this sense, I must yet remark, that the representations of the mind scarcely display their influence on any other of the senses,

senses, to so extensive a degree, as they do upon this: hence it happens, that we sometimes fancy we see images before us, in the clearest manner, though the representation of them be merely a phantom of the brain. But the impression forcibly made on the retina, remains there for some time, even after the object itself has vanished. Thus we imagine we see a fiery ring, when a burning coal is swiftly moved in a circle.—That we believe we see many bright colours, when we rub and press the closed eye with the fingers, is owing to this cause, that the same kind of change is produced on the nerves of the eye by friction, as usually accompanies the sight of the colours themselves. But, whether colours, in general, depend upon the different degrees of vibration of the ether, or on the peculiar colouring elements of the rays of light, which, by their division, appear singly and distinctly in the prism, is a problem not yet, and which perhaps never will be solved.

By the next sense, namely, that of *Hearing*, we perceive the vibrations of the air, which take place during the sound. For this purpose, our ears are formed partly of cartilages, and partly of bones, in order to communicate these vibrations to the auditory nerves, and, by means of these, to the brain.

This sense also is more acute in the lower animals, than in the human species. The hare, for instance, is warned against approaching danger, by her uncommonly fine ear; the owl, being sensible
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of the softest sounds, makes use of her sharp ear to catch her prey.

The warm-blooded animals have an external and an internal ear ; but in almost every one of them it is of a different structure. Most animals can move their ears ; an advantage not enjoyed by man in his present state. It is not nature which formed our ears immovable, but an absurd custom, continued for many centuries, has gradually produced this effect. That the ears were not naturally designed to lie flat on the head, is sufficiently obvious from the number of muscles, with which they are provided, and each of which is designed to perform different motions.

The manner in which the sense of hearing is produced, is shortly this. The vibrations of the air, which take place by the sound of any, more or less elastic body, first fall on the external ear. Here the sound strikes and agitates the *tympanum*. But that the vibrations may not become too violent, and the tympanum may not burst, as is to be apprehended from a very loud and near sound, the ear is provided with a siphon, which anatomists call the *Eustachian tube*, and through which the air collected on the tympanum again escapes. But the vibration of the tympanum is also communicated through the four little bones of the ear ; it is forwarded through what is called the *stapes*, or stirrup, to the vestibule, or the first entrance, and through the membrane of the *fenestra rotunda*, as far as the innermost

innermost cavity of the ear, which resembles the shell of a snail, and is therefore called *cochlea*. But, as the whole labyrinth of the ear is filled with a subtile water in small quantity, this fluid must vibrate and gently agitate the substance of the auditory nerve, in consequence of which the change taking place in this nerve is propagated to the brain. The little water in the labyrinth obviously serves the purpose of preventing the soft pappy substance of the auditory nerve, from being too violently agitated. The use of the cochlea, which is very artificially constructed, cannot be easily determined; it is probably rather designed for the more accurate distinction of the depth and height of tones, than for the perception of sounds in general; for we may consider the tender nerves, that run along the spiral line of this cochlea, as an equal number of chords growing progressively shorter, and which, in a manner, repeat the external vibrations of the air, in the internal parts of the ear. This repetition appears to be performed according to a geometrical scale, since the same vibrations of the air take place here in a reduced proportion. Hence sounds, which are too loud and penetrating, offend our ears, because they shake the tender nerves too quickly and violently, so that they may even be lacerated, and produce deafness; but this is not the case, when the tympanum is broken by any accident.

Some persons, who are deficient in this sense, are obliged to make use of ear-trumpets; to turn
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their ear to the quarter from which the sound proceeds ; to place the hand at the side of the ear ; to open their mouth, or use some other assistant means. All this is done with a view to supply the motion of the ears, of which we have deprived ourselves by habits, contrary to the laws of nature, and which motions the lower animals perform, by pointing their ears in the direction from which the sound proceeds. In this manner, a greater portion of the sound enters the ear, and many divisions of sound, which might otherwise escape, are conveyed to the nerves.—By means of the teeth, and the bones of the head, sounds may be also conducted to the auditory nerves, so as to communicate the necessary vibrations to the internal ear, though we can hear more easily and distinctly, when the sound comes through the organ itself. There is, however, a method of communicating sounds to the deaf, with better success than by the common ear-trumpets, which at length entirely spoil the remnant of that sense. This is effected by means of a cylindrical rod or tube of ivory, or any similar hard substance : the rod may be from six to twelve inches long and upwards, and from a quarter to half an inch in diameter ; if it be made hollow throughout, the part which is placed into the mouth between the front-teeth ought to have a much smaller aperture than the other extremity. This tube is well calculated to assist those deaf persons in particular, who wish to enjoy the music

of a harp, harpsichord, or other instrument. I once knew a gentleman, who was completely deaf, but with the assistance of a cylinder, such as I have described, was enabled to hear the softest notes distinctly, and to relish all the pleasures of music.

Lastly, it is a false assertion, that there is always a hole in the tympanum, through which, for instance, the smoke of tobacco coming from the mouth can be driven or blown out of the external ear. For it is owing to the double opening of the Eustachian tube, that many jugglers can cause the liquor they drink to flow out of the ear, as they discharge the smoke of tobacco through the nose and ears.

The *fourth* of our senses is that of *Smell*. It is nearly related to the sense of taste, probably from the great similarity of structure in the organs of these two senses, and their vicinity to each other. This is attended with the manifest advantage, that man and animals are generally enabled to discover, without danger, any unwholesome food, before it be received by the mouth. The functions of this sense are exercised by the nose, and chiefly by the mucous membrane which lines that organ. The whole inside of the nose is covered with this membrane, which is a continuation of the general integuments of the body, but much softer, more mucous and porous, full of vessels, uncommonly sensible, and towards the lower end of the nostrils covered with hair, to prevent any impurities ascending

cending too far. Of all the parts of the mouth connected with the nose, the most remarkable is the cavity of the jaw-bone, or the *sinus maxillaris*, which extends over the whole breadth of the two upper jaw-bones, and opens itself into the nose between the middle and lower shell. In new-born children, all these cavities are not yet formed, and this is the cause of their imperfect smell. In order to moisten the membranes, which otherwise would dry too much, by the air we inhale through the nostrils, there descends a nasal canal from each cavity of the eyes, which communicates with the lower shell, in order to conduct the tears continually into the nose.

If we make an effort to smell, we draw up the air filled with volatile, oily and saline particles of odorous substances: these particles come in contact with the fine branches of the olfactory nerves, which have the capacity of receiving impressions, and thus the sensation is imparted to the brain. These nerves rise immediately from the brain, and are of a more considerable size in many animals than in man. The bigness of the nerves, however, is no proof of the greater degree of sensation in the animal, or of the superior abilities of the mind. On the contrary, it is now pretty generally believed, that the mental capacities of organized beings are in an inverted proportion to the size of the nerves rising out of the brain, and the medullary substance of the spine. Thus, for instance, the amphibious

animals have strong nerves, in proportion to their small brain, and yet they are, in general, extremely insensible and stupid. Lean people, and ricketty children in particular, have very thin and fine nerves to a large brain; and who has not observed their sensibility of mind, as well as their quick and acute feelings?

But to return from this digression.—The saline and oily particles which affect our smell, are more volatile and subtile than those distinguished by the taste; yet this difference may in a great measure arise from the nerves of the tongue being covered with thicker membranes than those of the nose.—In many animals, the sense of smelling is more acute than in man, who would probably be much incommoded by too refined a perception of this kind. But it may be much improved by exercise, and corrupted by neglect. Hence the American savage can discover the footsteps of man and animals by smell alone;—on the contrary, those people who live in a bad and fetid atmosphere, are scarcely sensible of the difference between the most fragrant and offensive substances.—It deserves to be remarked, that most maniacs and inveterate hypochondriacs are excessively fond of snuff, and every thing that stimulates the nose.

Of all the quadrupeds we know, the dog excels in the acuteness of this sense; and there are many extraordinary instances recorded of his peculiar and astonishing powers of smell; with one of which,

as well authenticated as it is remarkable, I conclude this branch of the subject. In the year 1582 *Leonhard Zollikofer* set out from his Chateau Altenklingen in Switzerland, for Paris; the distance of which is upwards of five hundred English miles. A fortnight after his departure, the faithful dog, who had till then been confined, also set out for Paris, by himself. In the course of eight days, he arrived, and discovered his master in the midst of a crowd, after having searched for him in vain at his lodgings.

We are now arrived at the *fifth* and last of our senses, which is so distinguished a favourite of a great number of persons, that it appears, as if they wished to live only for the sake of gratifying their *Taste*. I have in former parts of this work endeavoured to inculcate the propriety and absolute necessity of attending to the effects, produced on this sense by the articles of food and drink, without which animal life cannot be long supported. In this place, therefore, there remains to be described only the mechanism and the functions of this sense. The principal organ of taste is the tongue, which in very few animals is as sensible as in man. They choose, indeed, among the herbs upon which they feed, by accurately distinguishing the useful from the noxious plants; but this appears to be more in consequence of their acute smell, than from the guidance of their taste. To describe the figure and shape of the tongue, is not consistent with my

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plan; but I shall briefly observe, that this organ is provided with innumerable nerves, which terminate in certain warts or papillæ of a different size and figure, so that they are either larger or smaller, more or less thick and blunt, some of them pointed, others oblong, others again fungous.

These nervous papillæ are the peculiar seat of the sense of taste, or the palate. But, to taste any thing whatever, either the tongue should be moist, or the substance applied to the tongue, contain moisture. In ascertaining the difference of taste, the little warts are, in some degree, stretched out: every substance we can taste, contains a greater or smaller proportion of saline and oily particles, which must be soluble by the tongue. If the sensation of the saline particles be acrid, the taste is strong, disagreeable, and at last painful: this is also the case, if the tongue, by burning or otherwise, be deprived of any part of the epidermis, or scarf-skin. Such bodies as contain no saline particles, as pure water, excite no kind of taste whatever. The difference of taste cannot be accounted for from the variety of figure in the crystals of the different salts, but rather arises from the chemical properties inherent in saline bodies. It may be laid down as a general rule, that every substance, which affords an agreeable taste to a healthy person of an uncorrupted palate, is wholesome: as, on the contrary, substances of an acrid and disagreeable taste are usually pernicious.

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The different degrees of taste depend on the greater or less sensibility of the small warts, or nervous papillæ, before described, as well as on the quality of the saliva, in a more or less healthy state of the body. If our nerves be blunted and weakened by smoking tobacco, by too strong and highly-seasoned food, by the copious use of spiritous liquors, by age, or other causes, we cannot reasonably expect to possess the same degree of sensibility in the palate, as if we had been more attentive to the ordinances of nature.—The more simple our usual aliment is, the less it is seasoned by hot spices, the less we stimulate the palate by wine and ardent spirits, we shall the better preserve our taste, together with the nerves of the tongue; so that we may have a greater relish for rich dishes, when they are but occasionally presented to our palate.

The senses, then, are those organs, by means of which the mind perceives or feels external objects. They may be considered as the satellites of the mind; and although some animals enjoy particular senses more acutely than man, yet his senses are more comprehensive, and he is amply compensated by the extensive use he can make of them, while the inferior creatures possess a more intensive application of their senses.

We have now considered the mode in which the senses operate; we have seen that every thing depends upon a nervous stimulus, which, by the most

diversified organs, is communicated to the mind: there remain to be added only a few remarks and explanations, relative to animal motion, or muscular action.

The machine of the human body is put in motion by a great diversity of powers.—Of these, the highest and most sublime is that of the *mind*; the next subordinate power is that of the *nerves*, immediately after which follows the most operative of all powers, that is, *muscular irritability*, or the peculiar faculty of the muscles, to contract in consequence of any stimulus applied to them. I purposely pass over, in this place, what physiologists have called the vital power, the peculiar power of life, or BLUMENBACH'S *vita propria*; and the healing power of nature, or *vis medicatrix naturæ* of the ancient physicians. All these powers are, in a great measure, hypothetical, though their frequent appearance in a diseased state of the body cannot be denied. And, as the muscular powers of men and animals are the most obvious to the senses, I shall content myself with stating what has a reference to these.

A *muscle* is a bundle of thin and parallel plates of fleshy threads or fibres. These are connected by a loose and generally fat cellular membrane; they separate into greater bundles, till at length several portions of a muscle lying parallel, or inclining towards one another, are again surrounded by a tender membrane of cellular texture, which forms one substance with the collateral partitions;
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and these, being again separated from the contiguous flesh, by a somewhat thicker cellular texture, are then considered as one distinct muscle. The human body has a considerable number of such muscles, yet many of the lower animals are provided with a much greater proportion of them. The caterpillar (*Phalena Cossus*, L.) has about 3500 muscles, while the human body can count scarcely 450. The muscles of animals, in general, are more powerful than those of man. What power, for instance, is the leaping chafer, or the grasshopper, obliged to employ, in order to make jumps, which extend to several hundred times the length of their own bodies? Another small insect, the flea, excels all other animals in its prodigious leaps; and it is able to carry a chain 80 times heavier than the whole of its body. All these apparent wonders are accomplished by means of the muscles. The figure of them, in man, is very irregular; those only, which are designed to perform certain *valvular* motions, such as the muscles of the mouth, the eye-lids, the bladder, the anus, &c. are of a circular or round figure. All the muscles contract in the direction of their fibres; the middle part or the belly of the muscle swells, hence it gets shorter, and both ends approach one another. Most of our muscles operate in the manner of a lever; the two ends of every muscle, in the extremities of animals, are fastened to the bones, by means of tendons or sinews; one of these

these extremities only being moveable, while the other remains fixed. Hence, in the contraction of the muscles, the moveable bone is drawn according to the direction of their fibres. If a muscle be contracted, it necessarily swells in thickness, as may be distinctly felt by placing the hand upon the *masseter*, a muscle of the lower jaw, and compressing the back teeth. As soon, however, as the nerve of the muscle is cut, or tied only, the contracting or swelling power instantly ceases, whence we are inclined to suppose, that the nerves have the principal share in regulating the powers of contraction, extension, and loco-motion. Whether this be done by the influx of a fluid into the nerves, or by some other latent power, has not yet been discovered. The energy of muscular action is remarkable in every healthy individual, but particularly in very strong men, and frequently too in maniacs. With the assistance of a few muscles only, they are enabled to raise a weight, often much exceeding that of the whole human frame.—In order to support the pressure of the lever, which still is accomplished with a great loss of power, and to preserve and consolidate the muscles in their situation, they run at one time under cross ligaments, as is the case on the fingers; at another time they move in rollers, for instance, in the eye; and, again, in other places, they are supported in their position by the peculiar structure of the bones, as we find on the upper part of the shoulders.

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If a computation could be made of all the losses of power which the muscles experience, partly by their frequent insertion at very acute angles, partly by their being extended as a chord, and drawing a weight opposite to its fixed point; partly by passing over certain joints which break the force to be applied to a particular joint; and, lastly, by their fleshy fibres being obstructed by the angles they make with the tendons;—if all these impediments could be reduced to an accurate calculation, we should be astonished at the contractile force exerted by the muscles, as it would exceed any amount of powers raised upon mechanical principles. It is confidently asserted, that the effect is scarcely $\frac{1}{25}$ th part of that force which the muscles employ; and yet a small number of them, the substance of which is equal in weight to a few pounds only, possess the power of lifting, or at least moving, several hundred weight, and this with inconceivable facility and swiftness.—It would be presumptuous to ascribe the great losses of muscular power to any defect in the animal œconomy. For, if we had the full use of our muscles, the just symmetry or proportion of the parts would be destroyed, and it might otherwise be attended with many physical evils, the consequences of which we cannot foresee.

As an ample compensation for the want of this gigantic and unnecessary strength, nature has provided the upper ends of the muscles, which bend the joints, and chiefly those of the knees, with certain

tain bags, *bursæ mucosæ*, which contain a lubricating mucus, to facilitate the motion of the tendons. And to this beneficent arrangement we owe the ability of exercising the power of the muscles with that extraordinary activity, and without feeling them rigid and inflexible, after violent and long-continued exercise.

We are now acquainted, in some degree, with the *nerves* and *muscles*; it will also be necessary to say a few words relative to the *blood*; as the doctrine of *temperaments*, already treated of in the Introduction, was principally founded on the nature of these three substances.

The quantity of blood in a human body of full growth, is generally computed at 30 lb. This liquid apparently consists of two parts only, namely, the *serum* or water, and the *crassamentum*, or the thick and coagulable part of the blood. But, as the latter can be again separated into two parts, namely, the *crur* or the thick and red part, and the coagulable *lymph*, the blood consequently consists of three principal constituents: the serum; the *crur*; and the lymph. Besides these, there is also a considerable quantity of air contained in the blood, which is, as it were, the medium of combination in all vegetable, animal, and mineral bodies; for, so soon as the air be expelled, whether by combustion, fermentation, putrefaction, or any other process, they hasten towards their inevitable dissolution.—There is further contained in the

blood, much water, a small portion of oil, some salt, earth, and a little iron, which, together with the heat produced by respiration, is supposed to impart the red colour to that fluid. The red colour is confined to the *cruor*, which consists of very minute red globules, nearly resembling in shape the eggs of silk-worms. Much remains to be said on the properties of the blood, and its wonderful circulation in the human body; but, as this subject, from want of room, cannot be satisfactorily discussed here, I am under the necessity of concluding this chapter with the following remark: that the variety of temperaments in man is owing to the different mixture of the fluids, and the diversified structure of the solids, particularly of the nerves and muscles. This is so true, that the whole picture of his physical life, together with his moral character, depends chiefly on the various combination of these parts. Yet there are different means by which peculiar temperaments are generated;—the first of these means is *climate*, which forms the national character;—the second is a certain *hereditary disposition*, which we derive from our parents;—and the third, is the peculiar *organization* of the individual.



C H A P. XII.

Practical Remarks and Rules relative to the TREATMENT AND PRESERVATION OF THE EYES:—On the importance of bestowing proper care on these organs—Of Short-sightedness, and the reverse—General Rules for the Preservation of the Eyes—Of the Conduct to be observed in Weak Eyes—Dietetical Precepts respecting the Eyes in general—Some additional Rules addressed to those who are obliged to make use of Eye-Glasses.

I. *On the importance of bestowing proper care on these organs.*

THERE is scarcely any part of the sensitive faculties, which contributes more to our physical comforts, than the unimpaired power of vision. Hence the management of the eyes deserves the care and attention of every person, who wishes to preserve them in a sound and perfect state, and to retard, although we cannot altogether avert, the natural consequences which accompany the increase of years. By our mode of life, this infirmity is much accelerated, and the eyes are weakened and worn out, or at least rendered too irritable. Such is particularly the case in those classes of people, who are much employed

ployed in sedentary occupations, work by candle-light, or who are much exposed to dust, &c.

The remarks, rules, and observations of this Chapter will relate chiefly to the treatment, both of sound and weak eyes, but occasionally also to the regimen of them in a diseased state.

More accuracy and attention is required in this respect, than inexperienced persons generally imagine. Till of late years, proper attention has not been paid, to establish and lay down well-founded and practical rules on the subject of the eyes and their treatment. Some modern physicians and oculists, however, have usefully devoted much time and labour to inquiries into the maladies of this organ. The fruits of these researches, as well as my own experience, on this point, I now proceed to lay before the reader.

II. *Of Short-sightedness, and the reverse.*

Man probably enjoys his sight to a later period of life than any of the lower animals, and might preserve it still longer, if he were better informed as to the mode of managing it. Those who are naturally short-sighted, are entitled to expect an improvement of vision with the advancement of age; for their eyes then gradually begin to lose that uncommon roundness which produces this defect, and thus to arrive at a greater enjoyment of the view of the beauties of nature. Persons who
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can see objects distinctly at a great distance only, cannot, however, be considered as less unfortunate; as they stand in need of glasses, merely for the sake of better distinguishing the more minute objects.

The nursery, or the room appropriated to the use of children, is generally the smallest, if not the lowest apartment in the house; so that the infant, having the opportunity to exercise its eyes on near objects only, becomes often more short-sighted than it is naturally. Hence children ought at least to be frequently carried to the window, and have their eyes directed to a distant view. On this account, a nursery enjoying an extensive prospect is much preferable to one where the view is confined. Many persons who see well, and at a distance in their infancy, hurt themselves by reading and writing by candle-light, but particularly females, by fine needle-work; as the eye is thereby too much accustomed to near and minute objects.

One of the bad consequences of short-sightedness is, that people get into a habit of making use of one eye only. The effort of directing both pupils, or apples of the eyes, to the object before them, is attended with too much trouble; hence they look at it sideways. It would be less detrimental, if they were to use either of the eyes alternately; but here too it is equally easy to acquire a bad habit, as with the use of the right or left hand alone. The eye, which is spared or not exercised, becomes inert and useless. It is still worse with the use of a
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magnifying or reading-glasses, by which people accustom themselves to shut the eye unemployed. The other, which is thus unduly exerted, somewhat shifts its position, it becomes progressively less flexible in its internal parts, and persons who take advantage of this temporary aid, do not find their powers of vision improve with the advancement of age.

To prevent these bad habits, the following advice may be useful.—Children suspected of being born short-sighted, should have their eyes directed to an object held close to them; and, if they appear to make use of one eye only, that eye should be occasionally closed, so that they may be obliged to exercise the other. When they learn to read, they should be taught to hold the book straight before their eyes; thus they will exert themselves to discover the printed letters at the greatest distance at which they are made to place it, if they wish to direct their eyes to it with less painful efforts. The eyes, by degrees, become accustomed to the necessary internal change of their posture, and the child is, in time, certain to improve in the extension of its sight. Many, indeed, have, at a juvenile age, got rid of their short-sightedness; but there cannot be found one instance of this improvement among those, who have, either from fashionable indulgence or necessity, once habituated themselves to use only one eye.

It is to be regretted, that in short-sighted individuals the breast and abdomen suffer much from compression during sedentary occupations, so that they are frequently troubled with hypochondria, and, what is still worse, are sometimes thrown into a consumption of the lungs. Though standing at intervals agrees with employments that do not require great mental exertion; but, in the contrary case, it consumes more strength than is generally imagined; and, in acute reflections, the mind ought not to be fatigued by the body. In this case, well-chosen *concave spectacles* may be used with advantage, so that the body may be placed, while reading or writing, in the most convenient posture. For such glasses will oblige the wearer to remove the object somewhat farther from the eyes.

After severe diseases of the eyes, one of them frequently becomes short-sighted, while the other is scarcely, if at all, affected. The consequence is, that we employ the sound eye alone, while the weak one is totally impaired by this neglect. In such a situation, we ought to use glasses in reading or writing, one of which should be carefully selected for the short-sighted eye, (according to the rules hereafter to be specified,) and the other of plain, clear glass, chiefly for the sake of affording an equal degree of light to both eyes. If, by this precaution, the weaker eye has perceptibly gained strength, we may substitute a less concave glass for
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that first used, so that in time it may resemble its fellow, and at length the patient be enabled to do without this assistance.

Eyes which form too extensive a focus, require no aid, unless they be extravagantly so. Then, indeed, we should not hesitate to make use of convex glasses. It is, however, a vulgar prejudice, that by such glasses the eye is too much disused, and rendered still more *far-sighted*. On the contrary, it is generally improved during the use of these spectacles, and, after the elapse of several years, may again dispense with them.

It is a consolation in many diseases of the eyes, that a long-continued weakness is seldom the forerunner of total blindness. This fatal event generally happens by sudden accidents, and is speedily decided.—Adults are not very subject to external complaints of the eye, or such as deprive the *cornea* of its transparency.

Small round spots, hovering before the eyes like strings of hollow little globules connected with one another, are defects of no great consequence, and of which perhaps no eye is completely free.

III. *General Rules for the Preservation of the Eyes.*

In all employments whatever, let us attend as much as possible to this circumstance, that the eyes may have an uniform and sufficient light, so as to affect the *retina* on all sides alike.—

The eyes materially suffer, when the rays of the sun are strongly reflected from the opposite wall or window.

In children, many disorders of the eye, which would never have had so fatal an issue, have terminated in total blindness, when parents have neglected to provide the cradle or window with proper curtains. For this reason, we ought to be extremely cautious in the choice of an apartment devoted to the labours of the day. We should not place ourselves directly opposite to the light, in reading and writing; we ought rather to take the light in a lateral direction.

A great obstacle to this arrangement is the change of light in the same apartment, by the progress of the sun. Where the sun dazzled in the morning, we find in the middle of the day the purest and most uniform light, which again in the afternoon, particularly in towns, becomes reverberating and extremely hurtful. This inconvenience should be remedied, if possible, by a frequent change of the room; or, at least, we might produce more uniformity in the light by means of window curtains, or blinds; and it may be observed, that the blinds of green or whited brown linen are best adapted for this purpose.

It is an useful practice to protect weak eyes from the descending rays by means of shades; in so far, as the vivid light striking them from above, is thus intercepted. But we ought to consider, that
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the lowermost half of the eye is by such means completely shaded; while the upper part of this organ is continually stimulated by the light it receives from below;—a practice which cannot be productive of good consequences. If the malady be situated in the upper part of the eye, this conduct is still more improper: for the healthy part is in this manner protected, and that already relaxed is still more weakened.

Darkness or shade is then only beneficial to the eyes, when they are unemployed, when the obscurity is natural, consequently every where extended. To rest a little during the twilight, is very suitable to weak eyes. No artificial darkness during the day is ever so uniform, but that the eye must exert itself at one time more than at another, and necessarily suffer by this change. Persons with weak or diseased eyes, who spend the whole day in an apartment darkened with green curtains, much injure themselves by this pernicious practice. It is far preferable to repair to clear day-light and the fresh air, and to direct the eyes to distant prospects, than to confine them to the close atmosphere of a room, and to the sight of near objects.

Lastly, it is an error, that weak eyes, when employed in minute vision, ought to have a faint light: by this practice they are certainly still more weakened. Thus green spectacles are very hurtful to some eyes, as they deprive them of that light which is necessary to distinct vision.

IV. *Of the conduct to be observed in Weak Eyes.*

The artificial light of candles and lamps is, upon the whole, detrimental to weak eyes; because the flame of a candle too powerfully illumines the eye in one point, and does not uniformly stimulate the *retina*;—but not, as some imagine, on account of the light being too strong for the eyes. This is so far from being the case, that the eye is less affected by a strong light, which generally is more uniform and steady.

The means used to prevent the great stimulus from the rays of light, are, in general, so regulated, that the screen may not only cover the flame, but that it may also concentrate the greatest part of the light. Thus the room is made dark, and only a small spot above and below this apparatus is illumined; a practice highly destructive. The study-lamps with large round screens, seem to be purposely contrived to impair the soundest eyes, by their continued use.—The best and most proper defence of weak eyes by candle-light, is a flat screen, projecting about two or three inches over the forehead; or even a round hat, with a brim of a proper size.—The green parchment screens formerly used, were likewise objectionable; for, although they admitted the free access of light on all sides, yet they produced too great a shade in a straight direction before the eyes.

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Those who are afflicted with weak eyes should always make use of two candles, so placed that their flame be neither too low, nor too much above the height of the eye. This is a circumstance of great importance, as the flame under the eye is uncommonly stimulating and fatiguing. Candles have this advantage, that their light is less offensive to the eye and less pernicious to the lungs; as they do not, in general, emit so much smoke as lamps. But, on the other hand, all candles have the following disadvantages: 1, that, by their burning downwards, the fatigued eye is progressively more strained in the later hours of candle-light; 2, that the unequal light they afford, is attended with the additional trouble of snuffing them; and, 3, that by the least commotion of the air, or, if made of bad materials, they offend the eye by their flaring light.—Hence a clear chamber-lamp, burning with the least possible smoke and smell, is far preferable and more soothing to the eye, than even wax-candles. Some of the lately improved Patent-lamps, originally contrived by a M. D'Argent in Switzerland, are well calculated to answer every useful purpose; but, instead of the common round screens, I would recommend another, immediately to be described.

Upon the whole, those *screens* are the best, which are applied to one side of the light only, which are not larger than is necessary to cover the flame, and which still admit a small quantity of light to pass

through the screen. This is obtained by a simple contrivance of taffety, slightly gummed, and folded so that it can be carried about in the pocket. These little screens are very convenient in travelling, and are possessed of the essential advantage, that they overshadow only the small angle formed for the individual who is affected with weak eyes, without depriving the rest of the company of light.—In the day-time, on the occasion of sealing letters, for instance, the light of a candle or taper is more troublesome to the eye than in the evening.

In the early morning, we should not too much exert the eyes immediately after rising. Hence it is advisable to remove the candle to some distance and under shade, in the long winter mornings, till the eye be gradually accustomed to it. For the same reason, the window-shutters ought not to be suddenly opened in very clear day-light. This immediate change, from darkness to the clearest light, occasions sensible pain even to the strongest eye. Upon the whole, writing fatigues the eyes less than reading; for the letters we form on the paper are previously imprinted on the mind; they lie mechanically to the hand, and consequently require much less acuteness of sight, than the series of letters and words we read. It is, for the same reason, much easier to the eye, to read our own hand-writing, than that of a stranger, however distinct. Besides, the letters and lines in writing are better distinguished from one another by the lower
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part of the blank paper, than the lines in a printed book, or on a manuscript: in both, they appear to flow together, and can be kept asunder only by great exertion of the eye. The case is considerably changed, when we endeavour to write remarkably well; when we make use of a glossy white paper, and particularly when we copy the writing of another person with great accuracy—in all which instances the sight is more impaired than in reading, especially by changing the direction of the eyes too frequently on papers, or books of different types. The extravagant elegance in the letter-press of many modern books, the splendid whiteness and smoothness of vellum paper, or of hot-pressed woven paper, the broad margin remarkably contrasting with the shining printer's ink, are ill calculated to preserve our eyes. And, if the lines be too close to each other, the columns too long, as in our extravagant newspapers, the ink too pale, as is now becoming fashionable, and the paper of a bluish cast—the eyes are then in a fair way of being completely ruined.

I read in the *Gentleman's Magazine* for April 1794 a proposal, to print on dark blue paper with white letters, or on green paper with yellow letters. This plan certainly deserves a fair trial, though it might meet with great difficulties in the execution.—The eyes would also be much saved, by making use of a fine light blue writing-paper, rather of a greenish

greenish tint, instead of the fashionable white or cream-coloured paper.

Every exertion of the eyes is most hurtful immediately after a meal, as well as at any time, when the blood is in great agitation.—In the dawn, in twilight, and in moonshine, we ought not to read or write, nor direct our sight attentively to objects, whether near or distant.

Refracted rays afford an unpleasant light, and oblique rays are particularly painful. A long apartment, not uniformly lighted, occasions very sensible vibrations in the pupil of the eye, when we take exercise in walking up and down the room. The most suitable apartment in this respect, is one forming a regular square, with broad windows to the east, in which there is an uniformly divided light, and still better by means of sky-lights. Garret windows afford a bad light; it being generally introduced, as it were, by a funnel, and illumining one part of the room, while the rest remains dark.

A sitting-room is best adapted to preserve the eyes, in which are pale green walls without paintings; two or three uniformly high windows, so as to spread an equal light; (yet so contrived that there may be some means of correcting too strong a light;) close and moveable green blinds; a green carpet on the floor; and, lastly, such shutters as may occasionally leave the upper part of the window uncovered, in order to admit sufficient light.—

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To sit with the back to the window, occasions a shade which forms a disagreeable contrast to the surrounding light. The writing-desk, therefore, ought to be so placed, that the last window be on the left hand, and that the right hand may throw no shade on the paper, and not too near a corner of the room, as this generally has an unfavourable light. A pillar sufficiently broad, between two windows, is a still more convenient situation for a desk; but we should not sit too close against the wall; a custom, which is excessively hurtful to the eyes.

An oblique position of the desk is the most proper; for it presents to us the writing materials in that posture, to which we are instinctively habituated to place a book, when we hold it in our hands, and from which the rays of light diverge more gradually than from a horizontal table. It is less hurtful to the breast and the abdomen, and also to the eyes, to use a desk of this form, and to write standing rather than sitting; provided that the height of the desk be in proportion to the length of the body, that it stand firm, and that both arms rest upon it, without being fatigued by raising them too high.—In *standing* before a desk, we have this additional advantage, that there is less occasion to direct the eyes upwards, than in sitting. Hence the conversation between tall persons and those of low stature is most troublesome to the latter, as they are constantly obliged to look upwards.

wards.—Those, with whom we converse, ought not to stand between our body and the light, as it is both rude, and intruding upon our eyes.

In the same position as we sit towards the window in the day-time, so at night we ought to place the candle. Even if it be provided with a green screen, as before described, a weak eye will not be able long to support its glare in a straight line. Were the candle to be elevated at our back, so as to allow the light to come down over our shoulders, we should then experience the same inconvenience, which attends that posture in day-light. Hence it is necessary to place it sideways, and to keep the book or paper in an oblique direction.

We should not expose ourselves in a straight direction to objects strongly illumined by the flame of a candle, or fire from a grate. Thus the highly-polished fenders and other fire-irons are injurious to sight; and not less so is a smooth and shining wax-cloth over a table, as refracting too much the rays of light: to the latter a green cloth is much preferable. In all cases, the light should at least be of equal height with the forehead; not close to a white wall, and still less before a looking-glass or other polished body.—To walk up and down a room, lighted with a single candle, so that at one time we have the full light in our eye, and at another are nearly in darkness, is very prejudicial to weak eyes. It is better to place the candle in the middle, in order to light the room more uniformly, or,
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what is still preferable, to hang it higher than the shade of our own body.

Where persons must have a light during the night, it ought to be placed in the next room, or at least within the chimney, that it may be entirely out of sight. If neither of these methods be convenient, we should place it behind or at the side of the bed, rather than in an opposite direction. For, if this be not attended to, the light may produce very noxious effects during sleep, even through the closed eye-lids. The same attention is required, to prevent the rays of the sun or moon, either directly or by reflection from the opposite wall, to strike the eyes of the person asleep.—As some men are known to sleep with their eyes open, it would be advisable to employ somebody to shut them, that they may not suffer by the accidents before mentioned.

Those who have weak eyes, should carefully avoid strong fires and even hot rooms; for heat still more dries the eyes already suffering from want of moisture. Indeed, it is highly probable, that the weakness of sight and early blindness, so common in this country, are in a great measure owing to the bad custom of hastening to the fire-side, whether coming from the cold air, or from the dark streets.

Weak eyes must be indulged with shady places, and protected against every dazzling object. But green arbours should be avoided, on account of
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the twinkling light occasioned by the agitation of the leaves. The exercise of the eyes ought never to be suspended for any length of time: too much rest is hurtful; and to sit whole hours of the evening without candle-light, is extremely pernicious. It is, however, very soothing to the eyes, to let them rest for half an hour during twilight. This should teach us to adopt the general and salutary rule, to rise with the dawn, and gradually to accustom ourselves to the artificial light of the evening. For a similar reason, those who complain of weakness of sight, ought not to resort to places artificially lighted in the day-time, as theatres, &c. Even the soundest eyes must inevitably suffer by a sudden change from light to darkness, or from darkness to strong light.

If it become necessary to let the eyes rest, we should by no means press the eye-lids too closely together, which, if long continued, is very hurtful. So is strong and frequent friction, which powerfully stimulates the nerves and hurts the eyes. If we sit for any length of time with closed eyes, we are easily overtaken by sleep, which, though beneficial, ought to be of short duration, that the eyes may not be overheated. As a protection against injury from external causes, it is most useful to wear a shade at such a distance, as may allow the eye free motion, and not keep it too warm. The green veils worn by ladies are, in this respect, well calculated to prevent the dust from entering the

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eye, as well as to protect it against the cold winds, and the burning rays of the sun.

The common eye-cases, used by travellers, and by artificers who work in substances that cause much dust to fly about, are, for the following reasons, improper: 1. the glass in the case stands too prominent, and diminishes the horizon; hence, as those who wear them cannot see sideways and downwards, but only straight before them, they have no safe footing on an uneven road; 2. the glass in these cases being easily covered with vapour, both from internal perspiration and external cold, prevents distinct vision. These eye-cases might be much improved by making the brim somewhat narrower, and substituting a fine filken gauze, or rather a thin plate of ivory dyed green, with a small horizontal incision, in preference to glass.

All glasses used to assist vision appear to require some effort of the eyes, and, unless they be indispensable, they should never be employed by persons at an early time of life. In proof of this assertion, I shall only remark, that by looking through a window of the finest glass, we feel our eyes much more fatigued, than if the window had been open. This is particularly the case in looking through coach-windows, where additional injury is occasioned to the eyes by the motion of the carriage, and the corrupted atmosphere arising from respiration. Green curtains in coaches are therefore judicious and proper.

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Of all the remedies for preserving weak eyes (for diseased eyes require professional assistance) bathing them in pure cold water, is the most refreshing and strengthening. But this ought not to be done above three or four times a day; otherwise it has a tendency to give an unnecessary stimulus to the eyes. Nor should it be done immediately after rising in the morning, but only when the moisture, which during sleep is deposited even in the soundest eyes, is nearly evaporated. This partial cold bath may be repeated after dinner and supper, at which times the eyes stand as much in need of it as in the morning. Not only the eyes, but also the brow, the region behind the ears, sometimes the whole head, and particularly the upper lip, which is closely connected with the optic nerves, should be bathed or washed as well as the eyes. In the morning, the eye ought not to be precipitately, but gradually exposed to the water: and the washing should be expeditiously performed. In drying or wiping the eye, we should proceed gently and carefully.. Immediately after washing, we should particularly guard against any rays of light, as well as every kind of exertion.

A large piece of sponge, which contains a good deal of water, so that it may not too soon become warm, is far preferable in these partial bathings, to the warm smooth hand or towel. The sponge should be frequently dipped into cold water, and occasionally allowed to lie for a few moments on the
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the eye, with the head bent backwards, while the eye is gently moved and a little opened during the application of the sponge.

The bathing of the eyes, in small glasses formed after the shape of them, is on that account less advantageous, as the water very soon turns lukewarm, and is perhaps too cold, when suddenly renewed. These glasses occasion another disagreeable sensation, as their edges will, in some degree, attach themselves to the skin, not unlike cupping-glasses.

The general cold bath, under certain restrictions, is useful; as it invigorates the whole body, and consequently strengthens the eyes; but in some cases it may do harm, by propelling the blood too forcibly to the head. This may, in a great measure, be prevented by not only washing the eyes and the whole head previously to entering the bath, but also by diving the whole face and head under water.

V. Dietetical Precepts respecting the Eyes in general.

Above all things, we must observe the old rule; to try carefully what best agrees with us, and to attend to moderation and regularity in our manner of living.

Smoking tobacco, and taking snuff, are injurious; as by either practice the eye is too much stimulated. It is a vulgar error, that people cannot

leave off these improper habits without injury to their health. They may be safely abandoned at once, though occasionally prescribed as medicines.—Tobacco * has only been known in Europe since the beginning of the seventeenth century, and was long merely a luxury. This plant is now much abused; and those who are once accustomed to it, cannot leave it off without great resolution. To such persons it does not afford relief as a medicine; their olfactory nerves have become almost insensible to its stimulus. As a medicinal remedy, it serves to draw superfluous humours from the head. But in those who make an extravagant use of this herb, especially in snuff, it imperceptibly weakens the nervous system, and particularly the power of memory.

After meals, and after the above stated bathings, it is beneficial to the eyes to remain in the open air, to direct our looks to a grass-plot, or to divert them with some amusing employment.—Some pretend to have observed, that their eyes are not so strong after they have eaten weak soups or broths, as after solid food: they further affirm,

* The tobacco-plant was first discovered growing wild in South America; in the year 1496 it was also found in Saint Domingo; in 1520 in Jucatan; from which last place the first seeds were brought over to Portugal in 1560, by the French Ambassador *Nicot*, who gave it its present name from the Island of *Tobago*, where it grew in great abundance. Hence *Linnaeus* calls it by the compound name of *Nicotiana Tabacum*.

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that their sight is more improved after a meal consisting entirely of vegetable aliment, than after a very moderate portion of animal food. These observations are far from being unimportant, and, if fully confirmed by experience, they may throw some light on the dietetical treatment of the eyes—a branch of medicine that has hitherto been too much neglected.—A short sleep after dinner can only be advantageous to the eyes of those, with whom this practice does not disagree; at all events, the eyes ought to be protected from day-light, which would hurt them more than they can be refreshed by a short slumber.—The particular rules respecting this practice, I have stated in the Seventh Chapter.—The steam of boiled coffee, gently applied, has also been recommended to weak eyes after dinner; but nothing has a more salutary tendency, in this respect, than to go to bed at an early hour; for most people impair their sight by heavy suppers and heating liquors, so that their eyes remain inflamed till next day. The same, indeed, is also the case with those who indulge too much in sleep.

A pure serene air is an essential requisite to the preservation of the eyes. Fetid exhalations sometimes affect the eye immediately; hence we should avoid the putrid effluvia from marshes and ditches, or other places in which the air is saturated with noxious vapours; for instance, the vicinity of

colour-shops, hartshorn-distilleries, and the like. It is, perhaps, unnecessary to point out every species of mephitic vapours to be shunned as the enemies of sight; yet it deserves to be remarked, that the exhalations of horse-stables are injurious, while the stalls, and other places where cattle are kept, are far less hurtful. Lastly, the galleries of churches, as well as the higher boxes and galleries of play-houses, are the most pernicious places, as the vapours ascending from a great number of people assembled below, are extremely detrimental to sight.

On the other hand, the frequent enjoyment of a pure and fresh air, the occasional resort to elevated situations, nay, even the exposure to a moderate wind, are means of improvement. The more vigorous species of bodily exercise also, are in a certain degree useful; provided we do not exert the eye by reading, writing, &c. before the circulating fluids are reduced to their proper medium.—The application of electricity, which has benefited many weak eyes, by its fluid being conducted through a wooden point, is somewhat analogous to the going and standing against the wind; as it probably operates more by the gentle vibrations of the air, than by the communication of the electric fluid itself.

To read in the open air is hurtful to sound, and still more to weak eyes, unless the light of a clear day be modified at least by the foliage of a tree

tree from above ; yet even here the vivid stream of light surrounding the book is still fatiguing.

The greater or less interest we take in our employments, is of considerable importance to the organs of sight ; particularly if they be in a weak state. The more alluring a book or other exercise is, the longer we are able to continue it. Hence the important rule : to spare the most interesting labours for the half-wearied eyes ; yet, with prudent severity, always to appoint a task ; for, without this, the eyes, though at a later period, will inevitably experience more or less injury from such practices.

The state of the weather also greatly influences the power of vision. Persons troubled with weak eyes should therefore not be alarmed, if in a tempest or thunder-storm, in rainy, foggy weather, their sight be less acute.

Such individuals are easily affected by standing too long on cold or damp ground, by too light dress, and particularly by too thin covering of the legs and feet.

Riding on horseback is beneficial to weak eyes, as is also walking and riding in carriages. The principal advantage in all these exercises is, perhaps, derived from employing the eye with a great variety of objects, none of which occupies our attention too long.

Lastly, persons having black eye-lashes generally possess greater powers of vision, than those whose

eye-lashes are of a light colour; because the former afford a better screen for the eye, and reflect no light from their outside, by which the image on the retina could be rendered weaker and more indistinct.—MONTALDUS gives an account of a person whose eye-lids and eye-lashes were completely white; who consequently saw but indifferently in the day-time, but much better in the evening and at night. This man happened to be taken prisoner by the Moors, who dyed his eye-lids black, by which his sight was much improved: but, as soon as the colour was lost, his vision also became weaker.—Dr. RUSSELL mentions, in his *History of Aleppo*, that the Turkish ladies usually dye the inner side of their eye-lids black, not for the sake of ornament, but with a view of strengthening their sight.—It has further been observed, that when we lose the eye-lashes, as is often the case in the small-pox, the sense of vision is thereby considerably weakened. For a similar reason, the hair combed down the forehead, if of a dark colour, will assist the sight, as well as any other contrivance over the brow.

VI. *Some additional Rules addressed to those who are obliged to make use of Eye-glasses.*

The cases, in which eye-glasses may be used with advantage, are nearly the following: 1. when we are obliged to hold small objects at a considerable distance,

distance, before we can distinguish them: 2. when, in order to discern objects, we require more light than usual; for instance, when we are obliged to place a candle between the eye and the object; for this is one of the most destructive practices, by which the optic nerves and muscles uncommonly suffer;—and, as the eye employs itself with the object in proportion to the degree of light reflected upon it, the pupil ought likewise to dilate accordingly; but, instead of which, it is forced to contract, on account of the too powerful light produced by the intermediate candle: 3. when a near object, upon accurate and attentive examination, becomes obscure, and begins to appear covered, as it were, with a mist or fog: 4. when, in reading or writing, the letters seem to flow into one another, and look as if they were double or treble; 5. when the eyes are easily fatigued, and we are obliged from time to time to shut them, or to direct them to fresh objects, for the sake of relief.

In the choice of spectacles we need not attend so much to their magnifying power, as to the circumstance of their agreeing with our sight; that is, when they enable us, clearly and without exertion, to see at the same distance, in which we formerly were accustomed to read or work. Hence we ought out of a number of glasses to choose those, which afford the best and clearest light in every state of the eye. But, if a person be short-sighted, he should choose a second glass, magnifying a little

more than the other, but somewhat less distinct, yet so that it may not disfigure the object. This is unpleasant at first, but the eyes in time accustom themselves to it, and daily improve. If, after some time, we make use of less concave glasses, there is no doubt, that in the course of a few years, according to particular circumstances, the defect of short-sightedness may be gradually removed.

He who observes this regular gradation with his spectacles, may preserve his eyes to the latest period of life. But we should not make these changes too rapidly, lest the aid of art be too soon exhausted, and the wearer of glasses perhaps be unable to find any of sufficient magnifying powers. It is further a hurtful practice, to use any other but our own glasses, to which the eye has been accustomed;—every irregularity is injurious, and the preservation of the eyes depends chiefly on uniformity, with respect to glasses as well as to the light, in which the organs of sight are exercised.

In using one glass only, people accustom themselves to neglect one of the eyes; and, on this account, spectacles are preferable. Yet both glasses must be separately fitted to each eye, and by no means promiscuously used; for this would increase the evil.—If, however, we make use of one glass only, each of the eyes ought, by turns, to be habituated to it.

Many persons wear glasses in the evening, and can dispense with them in day-light. This is rather

ther a dangerous practice ; and, if it be not too late, they should choofe a fecond pair of glaffes, fomewhat more magnifying, and to be ufed by candle-light only. In this manner, the retina would receive an equal portion of light, at one time as well as another, and the eye longer preferve its vigour.

Green glaffes are faid to be moft fuitable to the eye, fince they modify the impreffion of light on the retina. Though this be in a great measure true, they cannot be indifcriminately recommended, and certainly not to fuch as have weak eyes. Green is indeed foother to the eye, more than any other colour, but, at the fame time, it fomewhat darkens the objects, efpecially at firft. Thofe of a vigorous fight only fhould make ufe of them as prefervatives, efpecially by the fire or candle-light. But, if white or light-coloured objects appear red, after having ufed green glaffes for a fhort time, we fhould difcontinue their ufe ; as this phenomenon is a certain proof, that they will in the end deftroy the eyes. If the green colour does not in two or three days become imperceptible, but appears constantly upon the paper, as it did at firft, it is a farther criterion that the ufe of them is improper.

Many give the preference to large reading-glaffes ; in order to avoid wearing fpectacles. It is however obvious, that it muft be a pernicious practice, to keep the eyes in constant exertion, as
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is the case here, where every motion of the hand and the head necessarily alters the distance. In addition to this inconvenience, the dazzling splendour of the rays, reflected from the surface of the glass, weakens the eye to such a degree, as to render the use of spectacles ultimately indispensable, with this only difference, that the eyes require greater magnifying powers, than might have been necessary without this depravation.

Hence spectacles are in every respect preferable, as they are not only more conformable to the nature and mechanism of the eye, but also more convenient: they are uniformly placed before the objects by the imperceptible motion of the head; they leave the space between the object and the eyes open and free; and being generally not so thick, and lying at an uniform distance before the eye, they present the objects more clearly and distinctly, than reading-glasses.

Those who have weak eyes, ought not to employ themselves, even occasionally, in a manner that may be fatiguing to the sight. Particularly hurtful are those occupations, in which one eye only is exerted, and must consequently be placed in positions, different from those of the other eye, which is at rest. For this reason, the use of magnifying glasses, of whatever kind, is more pernicious to weak eyes, if we always use the same eye, and purposely shut the other, than if we could alternately make use of either. On this account,
microscopical

microscopical investigations are less hurtful; if, while one eye be employed, we can keep the other open.

We should not make too frequent trials to discover, whether we have improved in sight, or not; for the exertion necessary upon these occasions, is uncommonly stimulating and harassing.

Spectacles ought to be used only for the purposes they are designed; namely, in such employments as require the assistance of art, and where the eye is always kept at an equal distance; for instance, in reading or writing. We should not without a full trial make choice of a pair of glasses, nor be satisfied with those which, at first trial, exhibit the objects clearly and distinctly. For things will not always occur at the same distance before us, as they appear at the first-experiment. It would be proper to try a pair of glasses for a day or two, particularly by candle-light; to use them in that posture of the body to which we are accustomed; and, if with the usual kind of labour, we do not feel our eyes more than usually fatigued, but rather somewhat relieved, we then ought to adopt these glasses. But, as it is next to impossible to meet with a pair of glasses in the shops, which fit both eyes, there is nothing more absurd, than to purchase spectacles ready made. Certain as it is, it may not be generally known, that there is perhaps not one person among thousands, whose eyes are both of an equal size and constitution.

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For this obvious reason, different eyes should be accommodated with different glasses; and, if we consult our interest in an affair of such consequence, we shall be cautious in selecting for each eye a separate glass. The following advice is submitted to those who have no optician at hand.

Short-sighted persons, who wish for a proper concave or magnifying glass, may take the exact focus, or point of vision, by presenting the smallest print very close to the eye, and gradually removing it, as far as their eye can read the letters distinctly, and without the least exertion. When they have accurately ascertained the focus, after frequent trials, let them employ another person to take the measure of this distance, with a slip of paper, in the nicest possible manner. An optician receiving this measure, and being informed at what distance the glasses are intended to be used, will be able to judge, in a certain degree, although by no means so accurately as by a personal conference with the short-sighted person.

Such as observe their eyes to be inclined to far-sightedness, may proceed exactly in a similar manner. But all eye-glasses ought to be furnished with double joints or springs; as those with single joints are not only inconvenient on the nose, but what is worse, they are apt to shift the point of vision with every motion of the head, and thus injure the eyes.

Finally, in such occupations as require a more or less extended view of the objects, for instance,
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in playing at cards, where the distance of the objects must be frequently varied, it would be extremely injudicious to use spectacles; as no eye whatever can bear such exertions, without uncommon fatigue. For a similar reason, it is hurtful to these important organs, to keep the spectacles on the head after close work, when by some accident we are obliged to search for something dropt, or mislaid. Thus we force the eye to see further than it is enabled to do by the construction of the spectacles. I need not observe, that many good eyes are spoiled by such imprudent practices.



CONCLUSION.

THE preceding Chapters contain the principal outlines, relative to the treatment of the human body in a healthy state, so far as the limits of this work would admit, without transgressing too much on the indulgence of the reader.

To recapitulate in a concise manner several useful precepts, which have been more fully laid down in former parts of this work, I shall conclude the whole with a few general reflections.

Moderation, in every respect, ought to be the first and leading maxim of those, who wish to live long and healthy. Both extremes, in the most opposite things, frequently border on each other. The greatest joy may occasion the most sensible pain; on the contrary, moderate pain is often accompanied with feelings not altogether disagreeable. The highest pleasure, indeed, is closely connected with aversion, and it is difficult to avoid the latter, after the enjoyment of the former. Hence prudence enjoins us, to oppose the progress of violent sensations and affections, before they have attained the highest degree.

Cleanliness is a principal duty of man, and an unclean or filthy person is never completely healthy. It is better to wash ourselves ten times a day,

day, than to allow one dirty spot to remain on the skin. On a place where impurities are suffered to clog the pores, not only insensible perspiration, but likewise the absorption by the skin is entirely suppressed; and if the whole body be, as it were, covered with a varnish formed of perspirable matter, it is impossible that a person in such a state can possess a salubrious blood, or enjoy good health.

Many diseases originate from a corrupted *atmosphere*, but a still greater number from the sudden changes of the *air*. Hence the necessity of exposing ourselves daily to such changes, and of renewing the air in the house and apartments we inhabit, by opening the doors and windows every clear morning, or during the day, as often as it can be conveniently done. Upon the whole, to encounter cold weather, however intense, has the effect of bracing the fibres of the system in general, and is attended with danger only, when we suddenly remove to a warmer temperature. For this reason, it is extremely injudicious, and a bad compliment paid to a visitor, to invite him to the fire-side, upon his first entering a house;—we should better consult his health, by conducting him to a cold room, or to some distance from the fire, till the temperature of his body be more approaching that of the apartment.

Every thing calculated to remove or cure diseases, may also produce them; for, whatever has a tendency to accomplish useful changes in the
body,

body, may, under different and opposite circumstances, be attended with the contrary effect. Hence no *medicine* whatever ought to be used as daily food—a favourite practice among invalids and valetudinarians.

Weakly individuals ought to eat frequently, but little at a time : the number of meals should correspond with the want of strength ;—it is less hurtful to a debilitated person, to eat a few mouthfuls every hour, than to make two or three hearty meals in one day.

There is no instance on record of any person having injured his health or endangered his life by *drinking water* with his meals ; but wine, beer, and spirits have generated a much greater number and diversity of patients, than would fill all the hospitals in the world. Such are the effects of intemperance in diet, particularly in the article of drink ; for neither beer, wine, nor spirits are of themselves hurtful, if used with moderation, and in a proper habit of body.—It is a vulgar prejudice, that water disagrees with many constitutions, and does not promote digestion so well as wine, beer, or spirits : on the contrary, *pure water* is greatly preferable to all brewed and distilled liquors, both with a view of bracing the digestive organs, and preventing complaints which arise from acrimony, or fulness of the blood.

It is an observation not less important than true, that by attending merely to a *proper diet*, a phleg-

matic habit may frequently be changed into a sanguine one, and the hypochondriac may be so far converted as to become a cheerful and contented member of society.

The duration of *work* or *exercise* cannot be easily ascertained with regard to every individual. Generally speaking, we ought to work only when we feel a natural inclination to either literary or mechanical labours. To force ourselves to any exertions, particularly those of the mind, is productive of indifferent performances.—It is better to exercise the mind in fine than in bad weather; but those who are continually making excursions in the former, cannot at all usefully employ themselves in the latter.

Of the twenty-four hours of a day, we ought, in a good state of health, to devote upon an average twelve hours to useful occupations, six to meals, amusements, or recreations, and six to sleep. This would be at once a natural and arithmetical proportion. It is, however, to be regretted that the hours cannot be thus accurately divided.—An industrious person frequently counts but twenty-three hours in a day; as one and sometimes even two hours slide away imperceptibly.

The modern means of promoting luxury and effeminacy are really surprising. It were to be wished, that the ingenious contrivers could be persuaded, their vain arts resemble those of the Quacks, whose poisonous productions gradually,

s s

though

though ultimately consume the vital marrow of the deluded.—Every new expedient we resort to, with a design to diminish human labour and encourage idleness, is an additional proof that our age is not in a state of improvement, but rather on the decline. Wretched is the man, who requires the aid of art more than of nature, to prolong his life, and to support so precarious an existence !—Conveniency leads to effeminacy ; effeminacy to general relaxation ; and this is unavoidably attended with total enervation.

A luxurious and dissipated life, once become fashionable, not only empties the purses of the inhabitants, but likewise depopulates the country itself. The ancient laws of Sparta only can stem the torrent of such mischievous consequences— or, if not checked in time, the citizen will degenerate into a feeble and irresolute slave, his offspring wither away like a plant on a foreign soil— thus Rome was subdued, when their feasts and public amusements became too frequent !

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